



CIBSE TM59 Overheating Analysis

**Islington Wharf Phase 4
Manchester**

Revision C

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OVERHEATING REPORT OF ISLINGTON WHARF PHASE 4

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Appendix A: Overheating Results		

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Revision Record			
Rev	Date	By	Summary of Changes
A	13.01.2022	JM	No. of hours blinds are drawn added Updated to suit comments
B	25.01.2022	JM	Results added for rooms not requiring blinds
C	01.02.2022	JM	Revised results

1 EXECUTIVE SUMMARY

This report documents the overheating analysis of Phase 4 of the Islington Wharf residential development to be located in Ancoats, Manchester. The site consists of 106 apartments over 15 storeys with a ground floor level containing the main entrance, refuse storage, cycle storage and plant areas.

The results demonstrate the following:-

Predominantly naturally ventilated apartments

A combination of opening windows, mechanical trickle ventilation and internal window blinds can mitigate summertime temperatures and no rooms exceed 26°C for more than 3% of the occupied hours. In addition the bedrooms do not exceed 26°C for more than 1% of the annual hours.

Predominantly mechanically ventilated apartments

Boosted mechanical ventilation is required in conjunction with internal blinds to deal with summertime temperatures and no rooms exceed 26°C for more than 3% of the occupied hours.

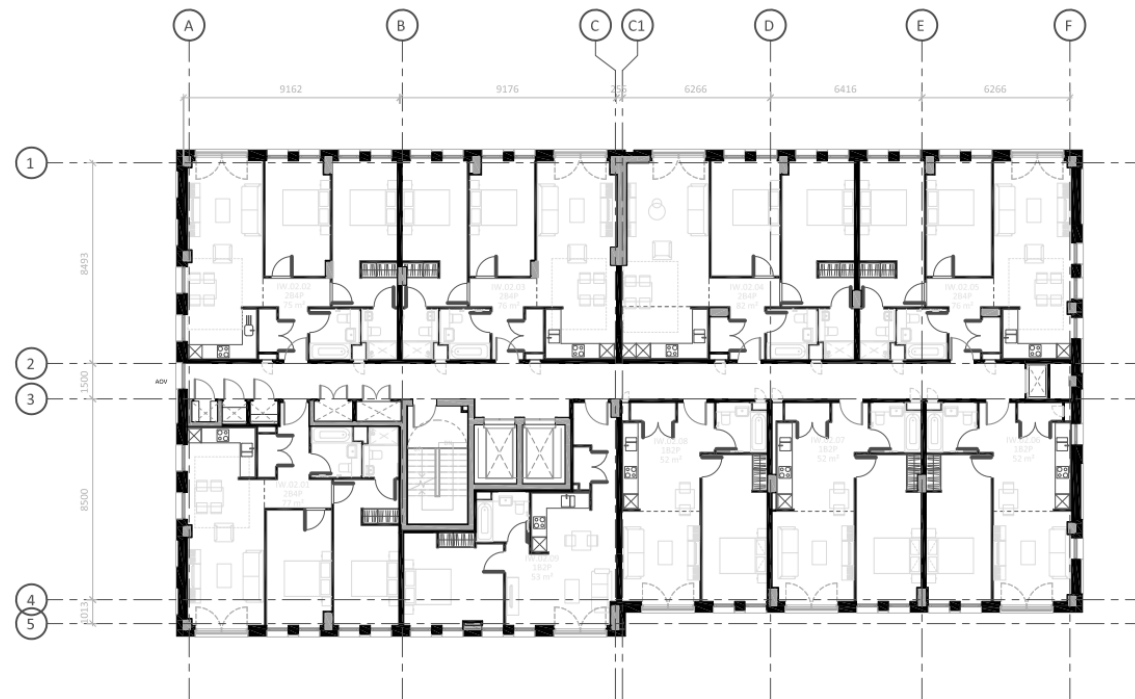
Communal corridors

The communal corridors do not present a significant risk of overheating and none of them exceed 28°C for more than 3% of the total annual hours.

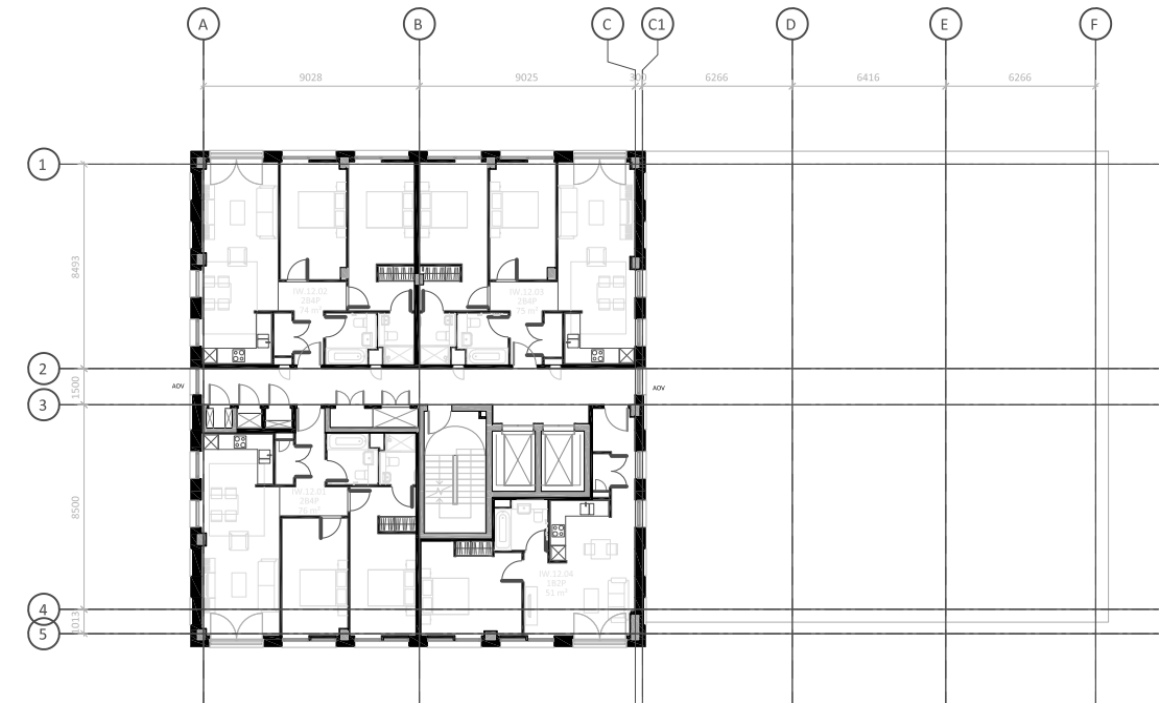
2 INTRODUCTION

The apartment layouts feature an open plan living/kitchen area with separate bedrooms and en suites/bathrooms. A communal corridor, stairwell and lifts provide access to the apartments on each floor. Due to external noise concerns not all apartments have access to natural ventilation from opening windows, although all apartments have mechanical ventilation supplied from a MVHR unit. Heating and domestic hot water to the apartments are provided by electric panel heaters and electric hot water heaters.

The analyses are to be carried out using IES Virtual Environment 2019 compliance version 7.0.13.0 and in line with CIBSE AM11 Building energy and environmental modelling.

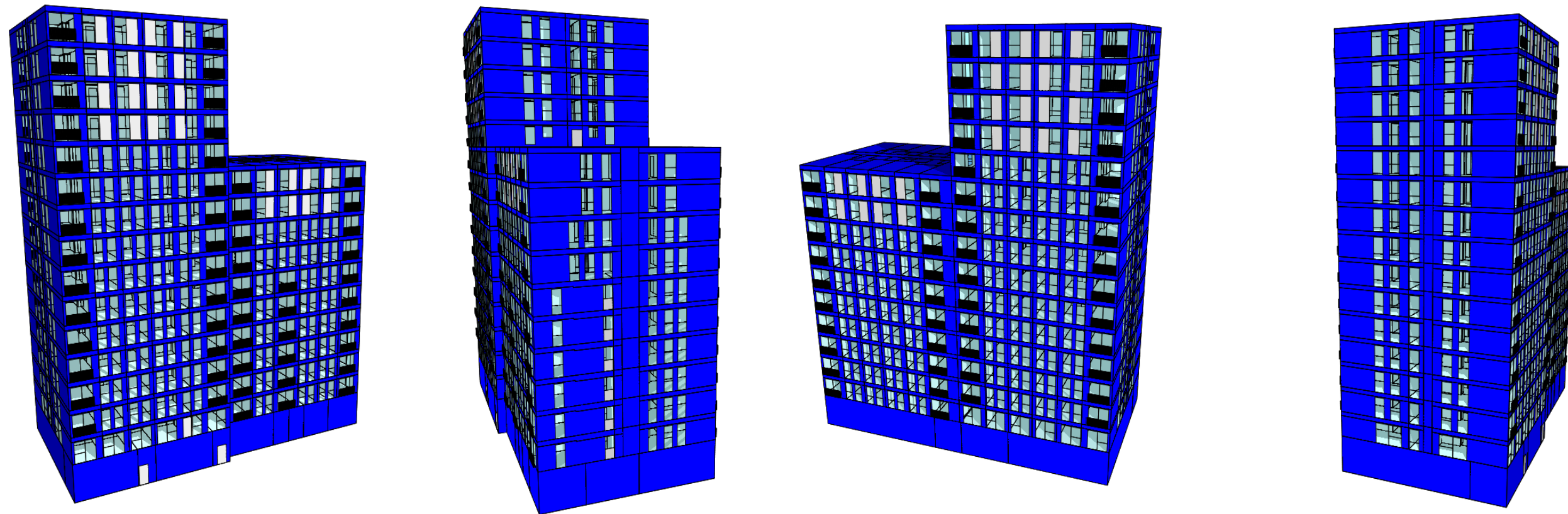


Levels 01 - 10



Levels 11 - 15

Typical floor layouts



Building model

3 DESIGN PRINCIPLES

The apartments will be assessed against the following criteria:-

Predominantly naturally ventilated spaces

1. For living rooms, kitchens and bedrooms: the number of hours during which DT 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. For bedrooms only: the operative temperature from 10pm to 7am shall not exceed 26°C for more than 1% of annual hours (32 hours per annum).

Bedrooms must pass both criteria.

Predominantly mechanically ventilated spaces

1. For living rooms, kitchens and bedrooms: the number of annual hours exceeding 26°C shall be documented.

Corridors

Corridors are assessed on the number of annual hours the operative temperature of 28°C is exceeded. Whilst not mandatory, if the temperature is exceeded for more than 3% of the total annual hours this is considered a significant risk.

4 DESIGN CRITERIA

The following general criteria have been used throughout the simulation:-

4.1 AIR PERMEABILITY

An air infiltration rate of 0.25ACH has been applied to the apartments based on Table 4.24 of CIBSE Guide A.

4.2 EXTERNAL ENVELOPE

The following U-values have been used:-

Element	Proposed U-value (W/m ² K)	Part L1A U-value (W/m ² K)
External walls	0.17	0.30
Exposed floor	0.13	0.25
Roof	0.13	0.20
Glazing	1.30	2.00

Building envelope U-values

4.3 GLAZING SPECIFICATION

The glazing is based on a G-value of 0.36.

4.4 INTERNAL WINDOW BLINDS

Internal blinds are included in the simulations. They have an assumed shading coefficient of 0.56 and a short-wave radiant fraction of 0.30. Any impact on the free area of the opening windows by the blinds is unknown, so no reduction in area has been accounted for. They have the following operation controls assigned to them:-

Incident radiation to lower device	>325W/m ²
Incident radiation to raise device	<325W/m ²
Night time resistance	1.25m ² K/W
Daytime resistance	1.25m ² K/W

As demonstrated in the results in Appendix A, a number of rooms require internal blinds to meet compliance with CIBSE TM59. The following table lists those rooms that require internal blinds to meet compliance and the number of hours they need to be drawn.

Location	No. annual hours blind use (h)		Location	No. annual hours blind use (h)		Location	No. annual hours blind use (h)		Location	No. annual hours blind use (h)		Location	No. annual hours blind use (h)
L01: IW.01.01 Kitchen/Living (M) - E	607		L04: IW.04.09 Kitchen/Living (M)	381		L07: IW.07.01 Bedroom 1 (M)	504		L09: IW.09.01 Bedroom 2 (M)	502		L11: IW.11.01 Bedroom 1 (M)	525
L01: IW.01.01 Kitchen/Living (M) - S	96		L05: IW.05.01 Bedroom 1 (M)	396		L07: IW.07.01 Bedroom 2 (M)	492		L09: IW.09.01 Kitchen/Living (M) - W	604		L11: IW.11.01 Bedroom 2 (M)	518
L01: IW.01.02 Kitchen/Living (M) - W	620		L05: IW.05.01 Bedroom 2 (M)	366		L07: IW.07.01 Kitchen/Living (M) - W	604		L09: IW.09.01 Kitchen/Living (M) - S	385		L11: IW.11.01 Kitchen/Living (M) - W	604
L01: IW.01.02 Kitchen/Living (M) - N	160		L05: IW.05.01 Kitchen/Living (M) - W	600		L07: IW.07.01 Kitchen/Living (M) - S	378		L09: IW.09.02 Bedroom 2 (M)	152		L11: IW.11.01 Kitchen/Living (M) - S	400
L02: IW.02.01 Kitchen/Living (M) - W	592		L05: IW.05.01 Kitchen/Living (M) - S	236		L07: IW.07.02 Bedroom 2 (M)	152		L09: IW.09.05 Kitchen/Living (M) - N	92		L11: IW.11.02 Kitchen/Living (M) - N	95
L02: IW.02.01 Kitchen/Living (M) - S	58		L05: IW.05.02 Bedroom 2 (M)	152		L07: IW.07.02 Kitchen/Living (M) - N	95		L09: IW.09.05 Kitchen/Living (M) - E	113		L11: IW.11.02 Kitchen/Living (M) - W	604
L02: IW.02.02 Kitchen/Living (M) - N	95		L05: IW.05.02 Kitchen/Living (M) - N	95		L07: IW.07.02 Kitchen/Living (M) - W	604		L09: IW.09.06 Bedroom 1 (N)	493		L11: IW.11.04 Bedroom (M)	525
L02: IW.02.02 Kitchen/Living (M) - W	601		L05: IW.05.02 Kitchen/Living (M) - W	604		L07: IW.07.05 Kitchen/Living (M) - N	92		L09: IW.09.06 Bedroom 2 (N)	500		L12: IW.12.01 Kitchen/Living (M) - W	604
L03: IW.03.01 Bedroom 2 (M)	258		L05: IW.05.05 Kitchen/Living (M) - N	92		L07: IW.07.05 Kitchen/Living (M) - E	60		L09: IW.09.07 Bedroom 1 (N)	509		L12: IW.12.01 Kitchen/Living (M) - S	384
L03: IW.03.01 Kitchen/Living (M) - W	594		L05: IW.05.05 Kitchen/Living (M) - E	38		L07: IW.07.08 Bedroom (M)	505		L09: IW.09.07 Bedroom 2 (N)	513		L12: IW.12.02 Kitchen/Living (M) - N	88
L03: IW.03.01 Kitchen/Living (M) - S	128		L05: IW.05.09 Bedroom (M)	418		L07: IW.07.08 Kitchen/Living (M)	490		L09: IW.09.08 Bedroom (M)	513		L12: IW.12.02 Kitchen/Living (M) - W	604
L03: IW.03.02 Bedroom 2 (M)	152		L05: IW.05.09 Kitchen/Living (M)	424		L08: IW.08.01 Bedroom 1 (M)	507		L09: IW.09.08 Kitchen/Living (M)	499		L13: IW.13.01 Kitchen/Living (M) - W	604
L03: IW.03.02 Kitchen/Living (M) - N	95		L06: IW.06.01 Bedroom 1 (M)	470		L08: IW.08.01 Bedroom 2 (M)	501		L10: IW.10.01 Bedroom 1 (M)	513		L13: IW.13.01 Kitchen/Living (M) - S	389
L03: IW.03.02 Kitchen/Living (M) - W	602		L06: IW.06.01 Bedroom 2 (M)	449		L08: IW.08.01 Kitchen/Living (M) - W	604		L10: IW.10.01 Bedroom 2 (M)	502		L13: IW.13.02 Kitchen/Living (M) - N	89
L03: IW.03.05 Kitchen/Living (M) - N	92		L06: IW.06.01 Kitchen/Living (M) - W	604		L08: IW.08.01 Kitchen/Living (M) - S	384		L10: IW.10.01 Kitchen/Living (M) - W	604		L13: IW.13.02 Kitchen/Living (M) - W	604
L03: IW.03.05 Kitchen/Living (M) - E	35		L06: IW.06.01 Kitchen/Living (M) - S	312		L08: IW.08.02 Bedroom 2 (M)	152		L10: IW.10.01 Kitchen/Living (M) - S	389		L14: IW.14.01 Kitchen/Living (M) - W	604
L03: IW.03.09 Kitchen/Living (M)	354		L06: IW.06.02 Bedroom 2 (M)	152		L08: IW.08.02 Kitchen/Living (M) - N	95		L10: IW.10.02 Kitchen/Living (M) - N	95		L14: IW.14.01 Kitchen/Living (M) - S	396
L04: IW.04.02 Bedroom 2 (M)	152		L06: IW.06.02 Kitchen/Living (M) - N	95		L08: IW.08.02 Kitchen/Living (M) - W	604		L10: IW.10.02 Kitchen/Living (M) - W	604		L14: IW.14.02 Kitchen/Living (M) - N	88
L04: IW.04.02 Kitchen/Living (M) - N	95		L06: IW.06.02 Kitchen/Living (M) - W	604		L08: IW.08.05 Kitchen/Living (M) - N	92		L10: IW.10.06 Bedroom 1 (N)	512		L14: IW.14.02 Kitchen/Living (M) - W	604
L04: IW.04.02 Kitchen/Living (M) - W	602		L06: IW.06.05 Kitchen/Living (M) - N	92		L08: IW.08.05 Kitchen/Living (M) - E	87		L10: IW.10.07 Bedroom 1 (N)	509		L15: IW.15.01 Kitchen/Living (M) - W	604
L04: IW.04.05 Kitchen/Living (M) - N	92		L06: IW.06.05 Kitchen/Living (M) - E	41		L08: IW.08.08 Bedroom (M)	505		L10: IW.10.07 Bedroom 2 (N)	513		L15: IW.15.01 Kitchen/Living (M) - S	401
L04: IW.04.05 Kitchen/Living (M) - E	37		L06: IW.06.09 Bedroom (M)	473		L08: IW.08.08 Kitchen/Living (M)	490		L10: IW.10.08 Bedroom (M)	513			
L04: IW.04.09 Bedroom (M)	369		L06: IW.06.09 Kitchen/Living (M)	473		L09: IW.09.01 Bedroom 1 (M)	513		L10: IW.10.08 Kitchen/Living (M)	499			

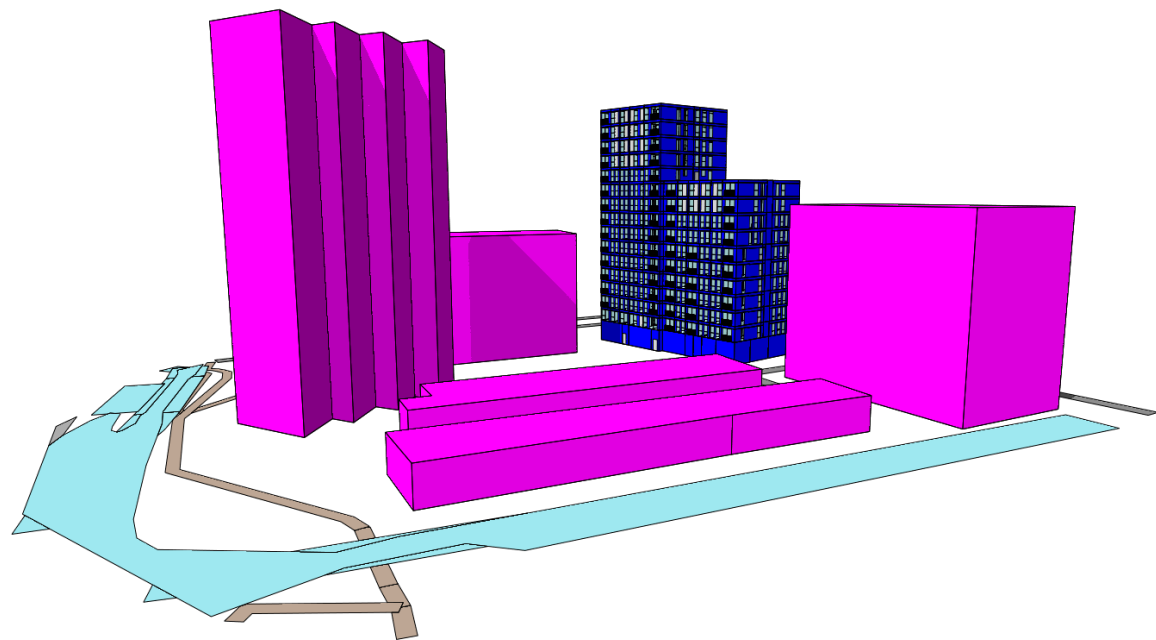
No. of hours blinds are drawn for rooms requiring blinds to meet TM59 compliance

4.5 WEATHER

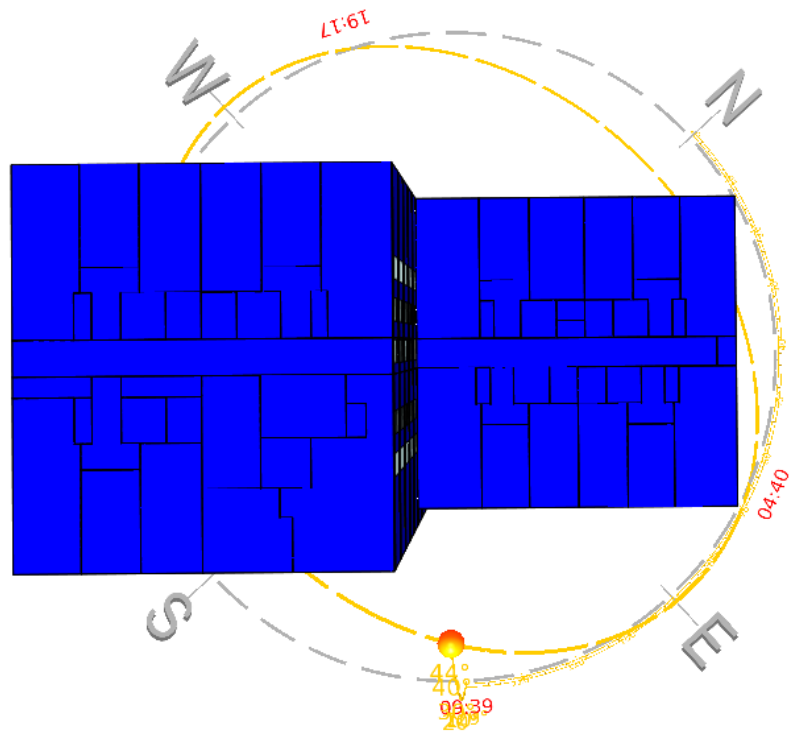
The building is to be located in Manchester. Weather file used in the calculation:- **Manchester_DSY1_2020High50**.

4.6 SITE & ORIENTATION

The building has been modelled in the orientation represented by the image below with the North direction set at 312°.



Site model



Building orientation

5 REFERENCE DATA

Architectural (Ryder Architecture)

Level 00 GA Plan	IW4-RYD-00-00-DR-A-3000 Rev P22
Level 01 GA Plan	IW4-RYD-00-00-DR-A-3001 Rev P14
Levels 02-06 GA Plans	IW4-RYD-00-00-DR-A-3002 Rev P12
Levels 07-08 GA Plans	IW4-RYD-00-00-DR-A-3007 Rev P14
Levels 09-10 GA Plans	IW4-RYD-00-00-DR-A-3009 Rev P10
Level 11 GA Plan	IW4-RYD-00-00-DR-A-3011 Rev P15
Levels 12-15 GA Plans	IW4-RYD-00-00-DR-A-3012 Rev P09
Roof Level GA Plan	IW4-RYD-00-00-DR-A-3016 Rev P08

Detailed Elevations 01 of 04	IW4-RYD-00-XX-DR-A-3650 Rev P05
Detailed Elevations 02 of 04	IW4-RYD-00-XX-DR-A-3651 Rev P05
Detailed Elevations 03 of 04	IW4-RYD-00-XX-DR-A-3652 Rev P05
Detailed Elevations 04 of 04	IW4-RYD-00-XX-DR-A-3653 Rev P05
GA Sections	IW4-RYD-00-XX-DR-A-3800 Rev P03

6 INTERNAL GAINS

The internal gains used throughout the simulations are detailed below. No differences between weekdays and weekends are considered. Bedrooms are set with a 24 hour occupancy profile which means that one person is always considered in each bedroom during the daytime and two people in each double bedroom at night. Kitchen/living rooms are unoccupied during sleeping hours and occupied during the rest of the day. Occupied periods are totalled as 3672 hours per year for bedrooms (24/7 May to September) and 1989 hours for living areas (13 hours per day May to September).

6.1 OCCUPANCY

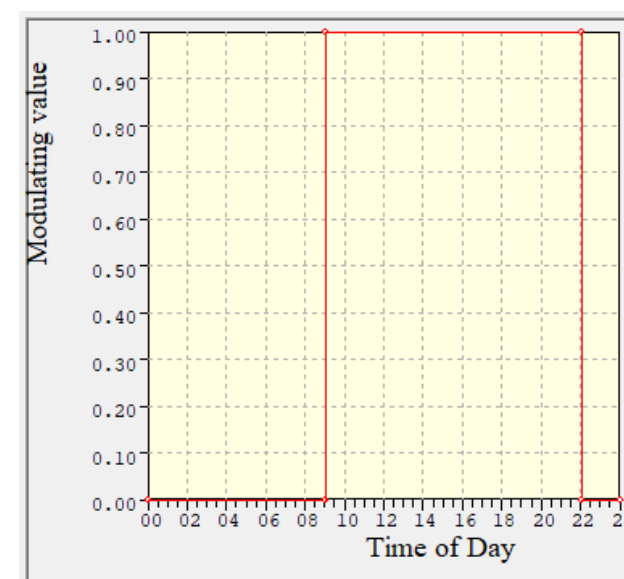
Based on CIBSE Guide A (2015a), a maximum sensible heat gain of 75W/person is assumed in the living spaces. An allowance for 30% reduced gain during sleeping is based on Addendum g to ANSI/ASHRAE Standard 55-2010.

Activity	Sensible heat gain per person (W)
Standard	75
Sleeping	52.5

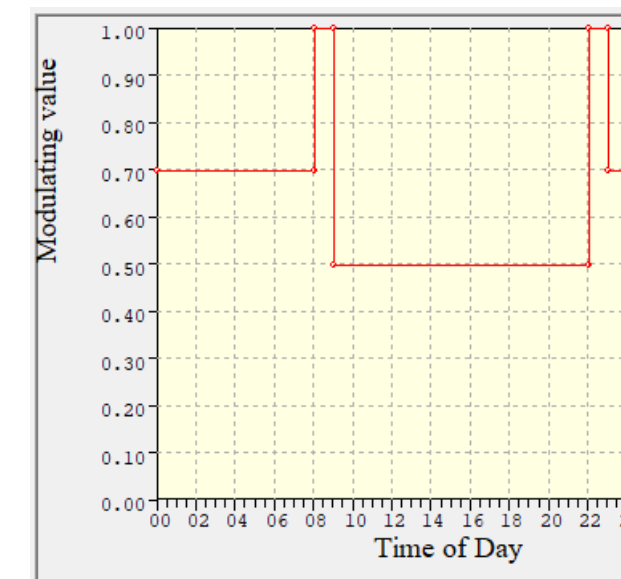
Occupant Gains

Unit/room type	Occupancy
1 bed living/kitchen	1 person from 9am to 10pm room is unoccupied for the rest of the day
2 bed living/kitchen	2 people from 9am to 10pm room is unoccupied for the rest of the day
Double bedroom	2 people at 70% gain from 11pm to 8am 2 people at full gain from 8am to 9am and from 10pm to 11pm 1 person at full gain from 9am to 10pm
Communal corridors	Assumed to be zero

Occupancy



Typical living/kitchen occupancy profile



Typical double bedroom occupancy profile

6.2 LIGHTING

Lighting energy is assumed to be proportional to floor area. A default value of 2W/m^2 is applied to all occupied areas from 6pm to 11 pm. It is assumed that the communal corridors will have their lighting controlled by PIR detectors so no gain is applied.

Zone Type	Gain (W/m^2)
Studios, living/kitchen/dining areas, bedrooms	2
Corridors	0

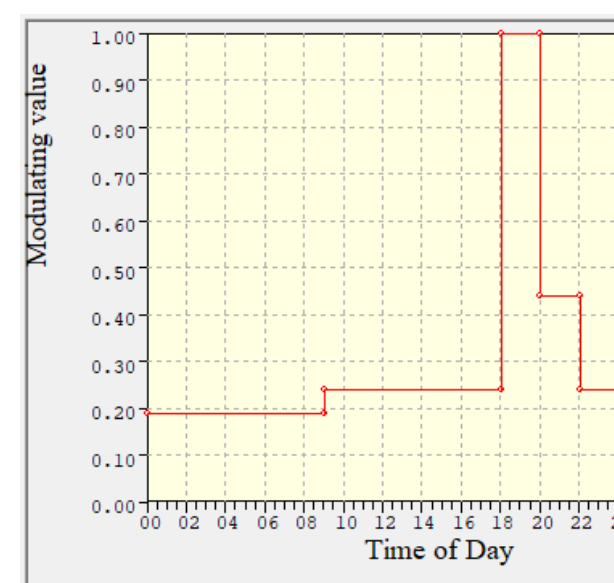
Lighting gains

6.3 EQUIPMENT

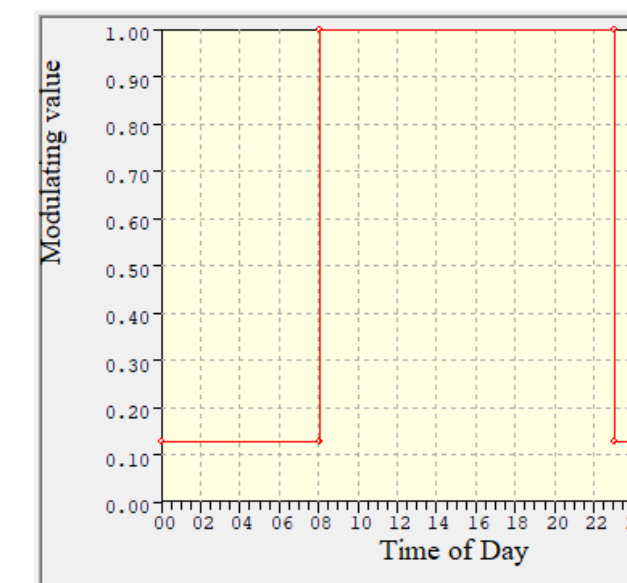
Equipment gains per room type are listed in the table below.

Unit/room type	Load
1 bed living/kitchen	Peak load of 450W from 6pm to 8pm 200W from 8pm to 10pm 110W from 9am to 6pm and 10pm to 12pm Base load of 85W for the rest of the day
2 bed living/kitchen	Peak load of 450W from 6pm to 8pm 200W from 8pm to 10pm 110W from 9am to 6pm and 10pm to 12pm Base load of 85W for the rest of the day
Double bedroom	Peak load of 80W from 8am to 11pm Base load of 10W during sleeping hours
Communal corridors	Assumed to be zero

Equipment gains



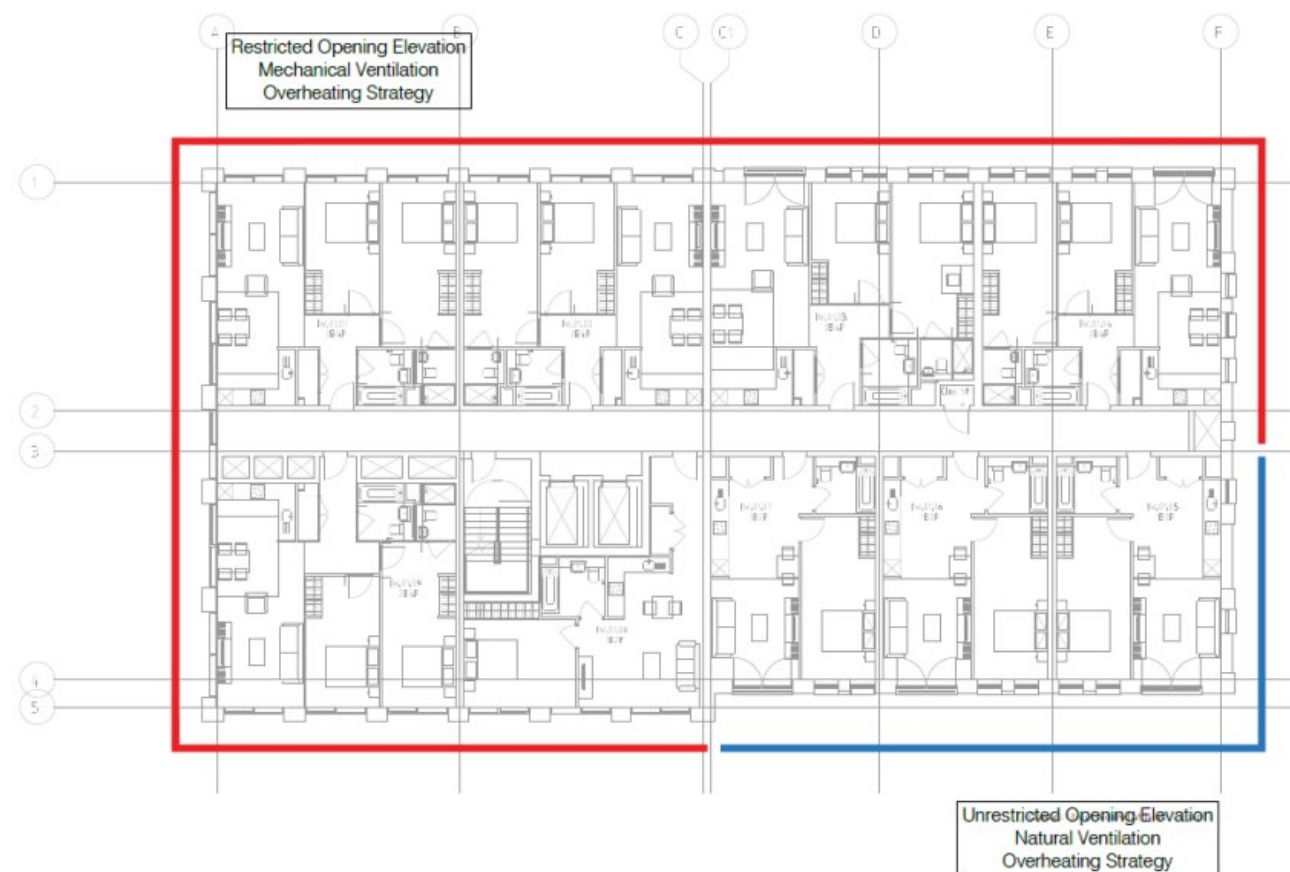
Typical living/kitchen equipment profile



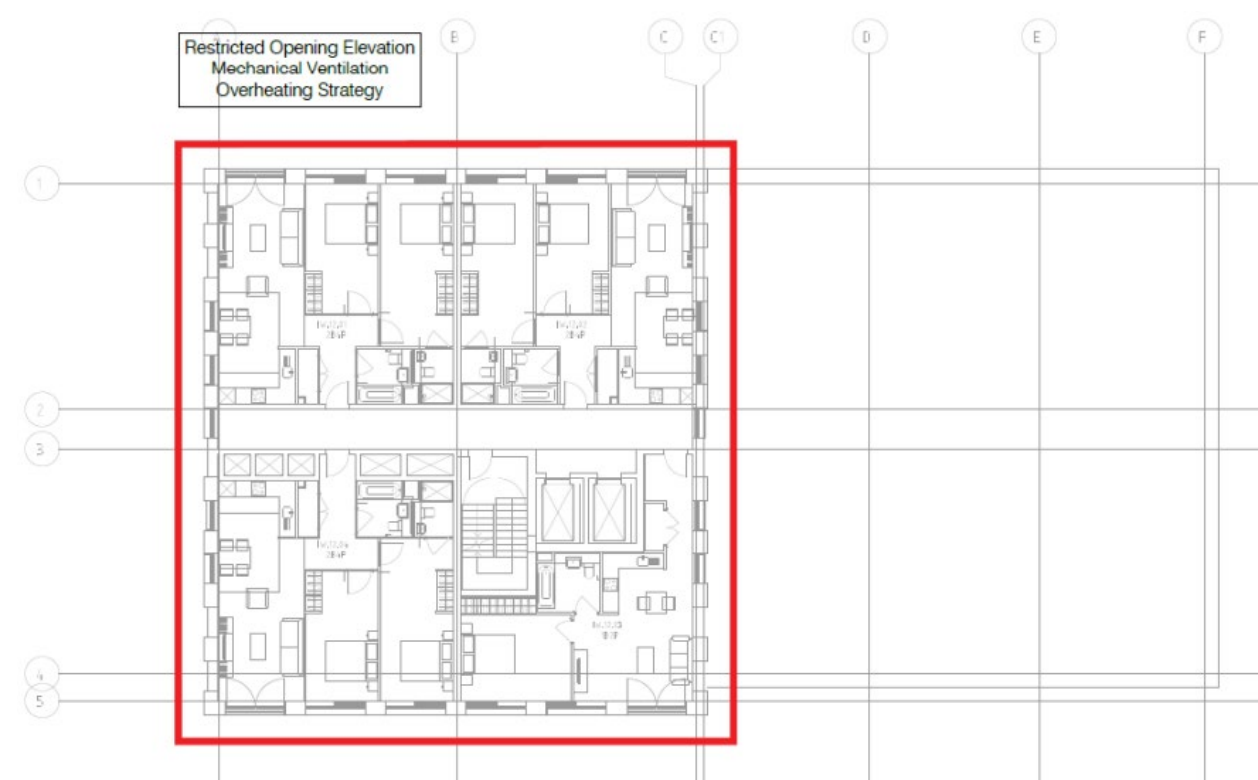
Typical double bedroom equipment profile

7 VENTILATION

Due to concerns regarding noise pollution, the windows on certain facades of the apartment block are not permitted to open for the purpose of the overheating assessment. The areas in question are highlighted in the image below, with the red line denoting which windows are to remain closed. These apartments will be referenced in the results as mechanically ventilated spaces.



Levels 01 – 10 opening strategy

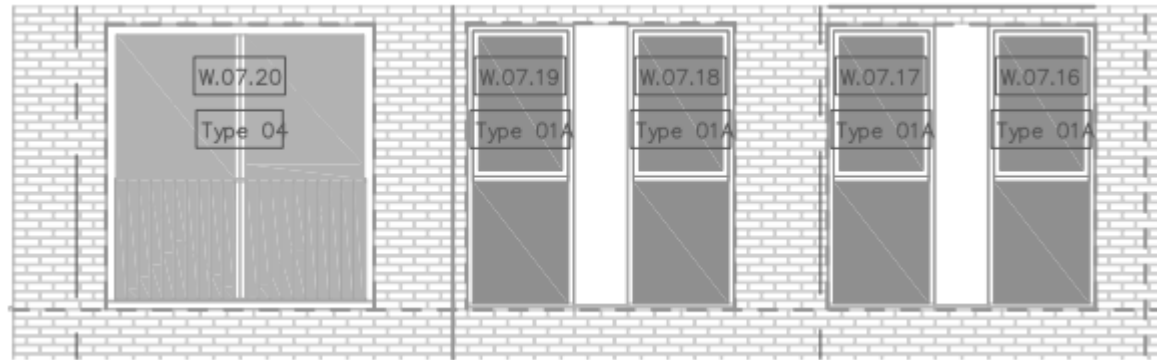


Levels 11 – 15 opening strategy

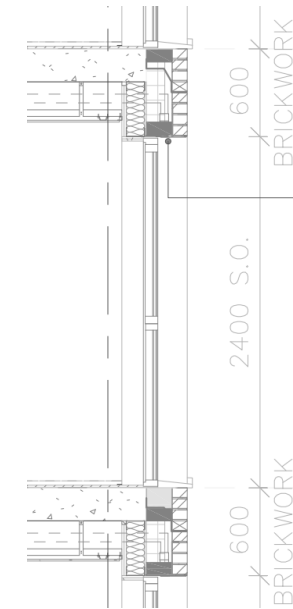
7.1 NATURAL VENTILATION

Where allowable, the windows are tilt & turn and restricted to 100mm. The balcony doors are assumed to fully open to 90°. The windows and balcony doors are recessed and a projection distance of 220mm has been accounted for.

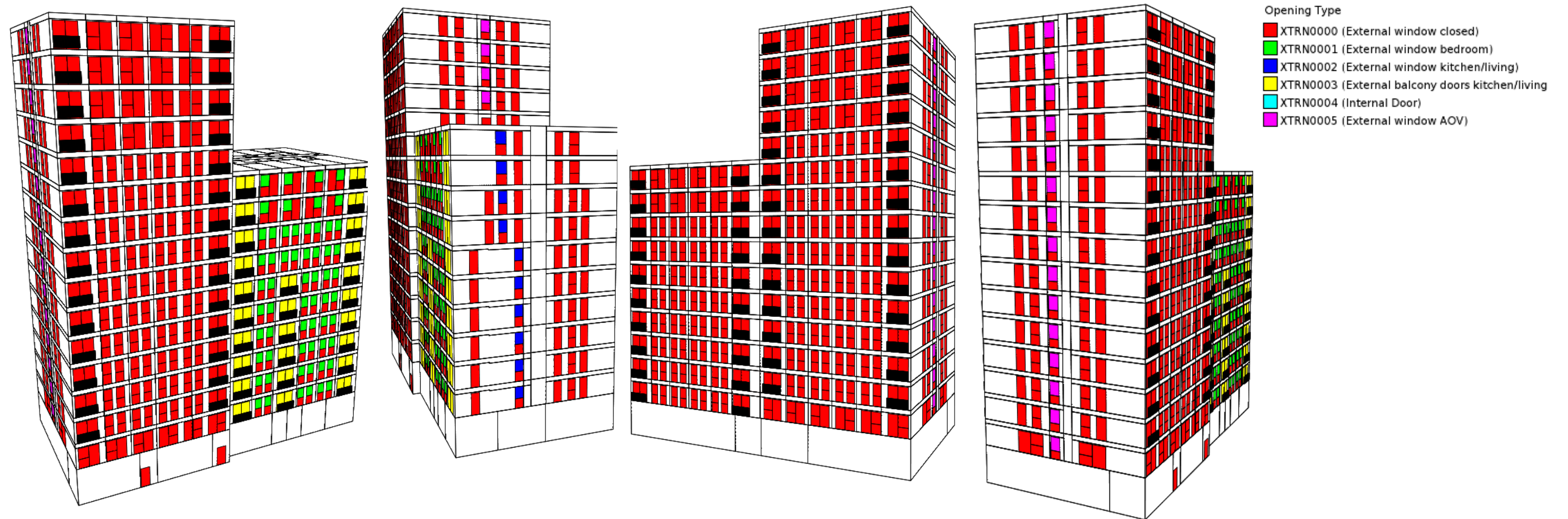
The windows are simulated to only open when internal temperatures exceed 22°C and the rooms are occupied. For living/kitchen areas the occupied period is 9am to 10pm. Bedrooms have permanent occupancy.



Typical window arrangement



Window details



Opening window locations

7.2 MECHANICAL VENTILATION

Heat recovery units are to be installed in each apartment. The MVHR units will provide the following trickle rates as per Tables 5.1a and 5.1b of CIBSE Guide Part F. Trickle ventilation is simulated to run continuously.

1 Bedroom Apartment		2 Bedroom Apartment	
Flow rate (l/s)		Flow rate (l/s)	
Living/kitchen	6.5	Living/kitchen	5.6
Double bedroom	6.5	Double bedroom	5.6

Mechanical ventilation trickle rates

It is necessary to employ the boost mode of the MVHR units to overcome summertime temperatures in the apartments whose windows are to remain closed, with boosted flow rates per room ranging from 25l/s to 90l/s.

The boosted flow rates are simulated to only operate when internal temperatures exceed 22°C and the rooms are occupied. For living/kitchen areas the occupied period is 9am to 10pm. Bedrooms have permanent occupancy.

IW.01.01	Max flow rate (l/s)	Total (l/s)	IW.01.02	Max flow rate (l/s)	Total (l/s)	IW.01.03	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125	Living/kitchen	80	130	Living/kitchen	75	125
Bedroom	25		Bedroom	25		Bedroom	25	
Bedroom	25		Bedroom	25		Bedroom	25	

IW.01.04	Max flow rate (l/s)	Total (l/s)	IW.01.05	Max flow rate (l/s)	Total (l/s)	IW.01.09	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125	Living/kitchen	75	125	Living/kitchen	50	75
Bedroom	25		Bedroom	25		Bedroom	25	
Bedroom	25		Bedroom	25				

Level 01

IW.02.01	Max flow rate (l/s)	Total (l/s)	IW.02.02	Max flow rate (l/s)	Total (l/s)	IW.02.03	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125	Living/kitchen	75	125	Living/kitchen	75	125
Bedroom	25		Bedroom	25		Bedroom	25	
Bedroom	25		Bedroom	25		Bedroom	25	

IW.02.04	Max flow rate (l/s)	Total (l/s)	IW.02.05	Max flow rate (l/s)	Total (l/s)	IW.02.09	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125	Living/kitchen	75	125	Living/kitchen	50	75
Bedroom	25		Bedroom	25		Bedroom	25	
Bedroom	25		Bedroom	25				

Level 02

IW.03.01	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.03.02	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.03.03	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.03.04	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.03.05	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.03.09	Max flow rate (l/s)	Total (l/s)
Living/kitchen	50	75
Bedroom	25	

Level 03

IW.04.01	Max flow rate (l/s)	Total (l/s)
Living/kitchen	80	130
Bedroom	25	
Bedroom	25	

IW.04.02	Max flow rate (l/s)	Total (l/s)
Living/kitchen	80	130
Bedroom	25	
Bedroom	25	

IW.04.03	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.04.04	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.04.05	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.04.09	Max flow rate (l/s)	Total (l/s)
Living/kitchen	50	75
Bedroom	25	

Level 04

IW.05.01	Max flow rate (l/s)	Total (l/s)
Living/kitchen	80	130
Bedroom	25	
Bedroom	25	

IW.05.02	Max flow rate (l/s)	Total (l/s)
Living/kitchen	80	130
Bedroom	25	
Bedroom	25	

IW.05.03	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.05.04	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.05.05	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.05.09	Max flow rate (l/s)	Total (l/s)
Living/kitchen	50	80
Bedroom	30	

Level 05

IW.06.01	Max flow rate (l/s)	Total (l/s)
Living/kitchen	80	130
Bedroom	25	
Bedroom	25	

IW.06.02	Max flow rate (l/s)	Total (l/s)
Living/kitchen	80	130
Bedroom	25	
Bedroom	25	

IW.06.03	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.06.04	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.06.05	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.06.09	Max flow rate (l/s)	Total (l/s)
Living/kitchen	50	80
Bedroom	30	

Level 06

IW.07.01	Max flow rate (l/s)	Total (l/s)
Living/kitchen	85	135
Bedroom	25	
Bedroom	25	

IW.07.02	Max flow rate (l/s)	Total (l/s)
Living/kitchen	80	130
Bedroom	25	
Bedroom	25	

IW.07.03	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.07.04	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.07.05	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.07.08	Max flow rate (l/s)	Total (l/s)
Living/kitchen	50	80
Bedroom	30	

Level 07

IW.08.01	Max flow rate (l/s)	Total (l/s)
Living/kitchen	85	135
Bedroom	25	
Bedroom	25	

IW.08.02	Max flow rate (l/s)	Total (l/s)
Living/kitchen	80	130
Bedroom	25	
Bedroom	25	

IW.08.03	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.08.04	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.08.05	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.08.08	Max flow rate (l/s)	Total (l/s)
Living/kitchen	50	80
Bedroom	30	

Level 08

IW.09.01	Max flow rate (l/s)	Total (l/s)
Living/kitchen	85	135
Bedroom	25	
Bedroom	25	

IW.09.02	Max flow rate (l/s)	Total (l/s)
Living/kitchen	80	130
Bedroom	25	
Bedroom	25	

IW.09.03	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.09.04	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.09.05	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.09.08	Max flow rate (l/s)	Total (l/s)
Living/kitchen	50	80
Bedroom	30	

Level 09

IW.10.01	Max flow rate (l/s)	Total (l/s)
Living/kitchen	90	140
Bedroom	25	
Bedroom	25	

IW.10.02	Max flow rate (l/s)	Total (l/s)
Living/kitchen	90	140
Bedroom	25	
Bedroom	25	

IW.10.03	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.10.04	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.10.05	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.10.08	Max flow rate (l/s)	Total (l/s)
Living/kitchen	50	75
Bedroom	25	

Level 10

IW.11.01	Max flow rate (l/s)	Total (l/s)
Living/kitchen	80	130
Bedroom	25	
Bedroom	25	

IW.11.02	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.11.03	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.11.04	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	100
Bedroom	25	

Level 11

IW.12.01	Max flow rate (l/s)	Total (l/s)
Living/kitchen	80	130
Bedroom	25	
Bedroom	25	

IW.12.02	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.12.03	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125
Bedroom	25	
Bedroom	25	

IW.12.04	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	100
Bedroom	25	

Level 12

IW.13.01	Max flow rate (l/s)	Total (l/s)	IW.13.02	Max flow rate (l/s)	Total (l/s)	IW.13.03	Max flow rate (l/s)	Total (l/s)	IW.13.04	Max flow rate (l/s)	Total (l/s)
Living/kitchen	80	130	Living/kitchen	75	125	Living/kitchen	75	125	Living/kitchen	75	100
Bedroom	25		Bedroom	25		Bedroom	25		Bedroom	25	
Bedroom	25		Bedroom	25		Bedroom	25				

Level 13

IW.14.01	Max flow rate (l/s)	Total (l/s)	IW.14.02	Max flow rate (l/s)	Total (l/s)	IW.14.03	Max flow rate (l/s)	Total (l/s)	IW.14.04	Max flow rate (l/s)	Total (l/s)
Living/kitchen	75	125	Living/kitchen	75	125	Living/kitchen	75	125	Living/kitchen	75	100
Bedroom	25		Bedroom	25		Bedroom	25		Bedroom	25	
Bedroom	25		Bedroom	25		Bedroom	25				

Level 14

IW.15.01	Max flow rate (l/s)	Total (l/s)	IW.15.02	Max flow rate (l/s)	Total (l/s)	IW.15.03	Max flow rate (l/s)	Total (l/s)	IW.15.04	Max flow rate (l/s)	Total (l/s)
Living/kitchen	80	130	Living/kitchen	90	140	Living/kitchen	75	125	Living/kitchen	75	100
Bedroom	25		Bedroom	25		Bedroom	25		Bedroom	25	
Bedroom	25		Bedroom	25		Bedroom	25				

Level 15

8 RESULTS

A full set of results can be found in Appendix A for assessments with and without internal blinds. The results are presented in the following format:-

Naturally ventilated apartments

The Summary tab provides an overview which combines both the results of Criterion A & B. To achieve a pass under Criterion A the column labelled “% Occupied hours $\Delta T \geq 1^\circ\text{K}$ ” should not be more than 3% for both living spaces and bedrooms. In addition, the bedrooms should not exceed a value of 32 under Criterion B for the column labelled “Total hours $> 26^\circ\text{C}$ ” which represents 1% of the total occupied hours.

Mechanically ventilated apartments

For both living spaces and bedrooms the results document the percentage annual occupied hours the operative temperature exceeds 26°C .

Communal corridors

The result should not exceed a value of 3 under the column labelled “% Annual hours $> 28^\circ\text{C}$ ”.



Appendix A

Overheating Results



Apartments
Natural Ventilation
(including Internal Blinds)

SUMMARY

CRITERION A

CRITERION B

Room name	Criterion (a)	Criterion (b)	Overall	Occupied	No. hours ΔT ≥	% Occupied	Pass/Fail	No. hours > 26°C			
	result	result	TM59 result	hours	1°K	hours ΔT ≥ 1°K		22:00-24:00	No. hours > 26°C 00:00-	Total hours > 26°C	Pass/Fail
L01: IW.01.06 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	3	0	3	Pass
L01: IW.01.06 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L01: IW.01.07 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	3	0	3	Pass
L01: IW.01.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L01: IW.01.08 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	3	0	3	Pass
L01: IW.01.08 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L02: IW.02.06 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	11	3	14	Pass
L02: IW.02.06 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L02: IW.02.07 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	11	3	14	Pass
L02: IW.02.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L02: IW.02.08 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	11	3	14	Pass
L02: IW.02.08 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L03: IW.03.06 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	11	3	14	Pass
L03: IW.03.06 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L03: IW.03.07 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	11	4	15	Pass
L03: IW.03.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L03: IW.03.08 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	11	3	14	Pass
L03: IW.03.08 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L04: IW.04.06 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	11	3	14	Pass
L04: IW.04.06 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L04: IW.04.07 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	11	4	15	Pass
L04: IW.04.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L04: IW.04.08 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	11	3	14	Pass
L04: IW.04.08 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L05: IW.05.06 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	11	3	14	Pass
L05: IW.05.06 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L05: IW.05.07 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	11	4	15	Pass
L05: IW.05.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L05: IW.05.08 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	11	3	14	Pass
L05: IW.05.08 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L06: IW.06.06 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	11	3	14	Pass
L06: IW.06.06 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L06: IW.06.07 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	11	5	16	Pass
L06: IW.06.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L06: IW.06.08 Bedroom (N)	Pass	Pass	Pass	3671	0	0	Pass	11	4	15	Pass
L06: IW.06.08 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L07: IW.07.06 Bedroom 1 (N)	Pass	Pass	Pass	3671	0	0	Pass	13	7	20	Pass
L07: IW.07.06 Bedroom 2 (N)	Pass	Pass	Pass	3671	0	0	Pass	14	8	22	Pass
L07: IW.07.06 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L07: IW.07.07 Bedroom 1 (N)	Pass	Pass	Pass	3671	0	0	Pass	13	7	20	Pass
L07: IW.07.07 Bedroom 2 (N)	Pass	Pass	Pass	3671	0	0	Pass	13	7	20	Pass
L07: IW.07.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L08: IW.08.06 Bedroom 1 (N)	Pass	Pass	Pass	3671	0	0	Pass	14	7	21	Pass
L08: IW.08.06 Bedroom 2 (N)	Pass	Pass	Pass	3671	0	0	Pass	14	9	23	Pass
L08: IW.08.06 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L08: IW.08.07 Bedroom 1 (N)	Pass	Pass	Pass	3671	0	0	Pass	14	7	21	Pass
L08: IW.08.07 Bedroom 2 (N)	Pass	Pass	Pass	3671	0	0	Pass	14	7	21	Pass
L08: IW.08.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L09: IW.09.06 Bedroom 1 (N)	Pass	Pass	Pass	3671	0	0	Pass	14	16	30	Pass
L09: IW.09.06 Bedroom 2 (N)	Pass	Pass	Pass	3671	0	0	Pass	14	17	31	Pass
L09: IW.09.06 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L09: IW.09.07 Bedroom 1 (N)	Pass	Pass	Pass	3671	0	0	Pass	14	16	30	Pass
L09: IW.09.07 Bedroom 2 (N)	Pass	Pass	Pass	3671	0	0	Pass	14	16	30	Pass
L09: IW.09.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L10: IW.10.06 Bedroom 1 (N)	Pass	Pass	Pass	3671	0	0	Pass	13	10	23	Pass
L10: IW.10.06 Bedroom 2 (N)	Pass	Pass	Pass	3671	0	0	Pass	14	12	26	Pass
L10: IW.10.06 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L10: IW.10.07 Bedroom 1 (N)	Pass	Pass	Pass	3671	0	0	Pass	13	10	23	Pass
L10: IW.10.07 Bedroom 2 (N)	Pass	Pass	Pass	3671	0	0	Pass	14	10	24	Pass
L10: IW.10.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA



Apartments
Mechanical Ventilation
(including Internal Blinds)

Bedrooms

Operative			Overall			Operative			Overall		
temperature (°C) - % hours in range			TM59 result			temperature (°C) - % hours in range			TM59 result		
Location	> 26.00		Location	> 26.00		Location	> 26.00		Location	> 26.00	
L01: IW.01.01 Kitchen/Living (M)	2.4	PASS	L01: IW.01.01 Bedroom 1 (M)	1.1	PASS	L08: IW.08.02 Bedroom 2 (M)	2.3	PASS			
L01: IW.01.02 Kitchen/Living (M)	3	PASS	L01: IW.01.01 Bedroom 2 (M)	1.5	PASS	L08: IW.08.03 Bedroom 1 (M)	1.9	PASS			
L01: IW.01.03 Kitchen/Living (M)	1.8	PASS	L01: IW.01.02 Bedroom 1 (M)	1.6	PASS	L08: IW.08.03 Bedroom 2 (M)	2	PASS			
L01: IW.01.04 Kitchen/Living (M)	1.4	PASS	L01: IW.01.02 Bedroom 2 (M)	1.9	PASS	L08: IW.08.04 Bedroom 1 (M)	1.6	PASS			
L01: IW.01.05 Kitchen/Living (M)	1.8	PASS	L01: IW.01.03 Bedroom 1 (M)	1.4	PASS	L08: IW.08.04 Bedroom 2 (M)	1.8	PASS			
L01: IW.01.09 Kitchen/Living (M)	1.1	PASS	L01: IW.01.03 Bedroom 2 (M)	1.5	PASS	L08: IW.08.05 Bedroom 1 (M)	1.9	PASS			
L02: IW.02.01 Kitchen/Living (M)	2.5	PASS	L01: IW.01.04 Bedroom 1 (M)	0.8	PASS	L08: IW.08.05 Bedroom 2 (M)	2.2	PASS			
L02: IW.02.02 Kitchen/Living (M)	3	PASS	L01: IW.01.04 Bedroom 2 (M)	1.1	PASS	L08: IW.08.08 Bedroom (M)	2	PASS			
L02: IW.02.03 Kitchen/Living (M)	2	PASS	L01: IW.01.05 Bedroom 1 (M)	0.9	PASS	L09: IW.09.01 Bedroom 1 (M)	2.1	PASS			
L02: IW.02.04 Kitchen/Living (M)	1.8	PASS	L01: IW.01.05 Bedroom 2 (M)	1.2	PASS	L09: IW.09.01 Bedroom 2 (M)	2.4	PASS			
L02: IW.02.05 Kitchen/Living (M)	2.4	PASS	L01: IW.01.09 Bedroom (M)	1.1	PASS	L09: IW.09.02 Bedroom 1 (M)	2	PASS			
L02: IW.02.09 Kitchen/Living (M)	1.8	PASS	L02: IW.02.01 Bedroom 1 (M)	1.5	PASS	L09: IW.09.02 Bedroom 2 (M)	2.3	PASS			
L03: IW.03.01 Kitchen/Living (M)	2.6	PASS	L02: IW.02.01 Bedroom 2 (M)	1.7	PASS	L09: IW.09.03 Bedroom 1 (M)	1.9	PASS			
L03: IW.03.02 Kitchen/Living (M)	3	PASS	L02: IW.02.02 Bedroom 1 (M)	1.9	PASS	L09: IW.09.03 Bedroom 2 (M)	1.9	PASS			
L03: IW.03.03 Kitchen/Living (M)	2.2	PASS	L02: IW.02.02 Bedroom 2 (M)	2.2	PASS	L09: IW.09.04 Bedroom 1 (M)	1.4	PASS			
L03: IW.03.04 Kitchen/Living (M)	1.9	PASS	L02: IW.02.03 Bedroom 1 (M)	1.7	PASS	L09: IW.09.04 Bedroom 2 (M)	1.5	PASS			
L03: IW.03.05 Kitchen/Living (M)	2.7	PASS	L02: IW.02.03 Bedroom 2 (M)	1.8	PASS	L09: IW.09.05 Bedroom 1 (M)	1.6	PASS			
L03: IW.03.09 Kitchen/Living (M)	2	PASS	L02: IW.02.04 Bedroom 1 (M)	1.4	PASS	L09: IW.09.05 Bedroom 2 (M)	1.8	PASS			
L04: IW.04.01 Kitchen/Living (M)	2.8	PASS	L02: IW.02.04 Bedroom 2 (M)	1.5	PASS	L09: IW.09.08 Bedroom (M)	2	PASS			
L04: IW.04.02 Kitchen/Living (M)	3	PASS	L02: IW.02.05 Bedroom 1 (M)	1.6	PASS	L10: IW.10.01 Bedroom 1 (M)	2	PASS			
L04: IW.04.03 Kitchen/Living (M)	2.2	PASS	L02: IW.02.05 Bedroom 2 (M)	1.9	PASS	L10: IW.10.01 Bedroom 2 (M)	2.3	PASS			
L04: IW.04.04 Kitchen/Living (M)	2	PASS	L02: IW.02.09 Bedroom (M)	1.8	PASS	L10: IW.10.02 Bedroom 1 (M)	1.9	PASS			
L04: IW.04.05 Kitchen/Living (M)	2.7	PASS	L03: IW.03.01 Bedroom 1 (M)	1.7	PASS	L10: IW.10.02 Bedroom 2 (M)	2.2	PASS			
L04: IW.04.09 Kitchen/Living (M)	2	PASS	L03: IW.03.01 Bedroom 2 (M)	2	PASS	L10: IW.10.03 Bedroom 1 (M)	1.8	PASS			
L05: IW.05.01 Kitchen/Living (M)	3	PASS	L03: IW.03.02 Bedroom 1 (M)	2	PASS	L10: IW.10.03 Bedroom 2 (M)	1.9	PASS			
L05: IW.05.02 Kitchen/Living (M)	3	PASS	L03: IW.03.02 Bedroom 2 (M)	2.3	PASS	L10: IW.10.04 Bedroom 1 (M)	1.1	PASS			
L05: IW.05.03 Kitchen/Living (M)	2.2	PASS	L03: IW.03.03 Bedroom 1 (M)	1.8	PASS	L10: IW.10.04 Bedroom 2 (M)	1.3	PASS			
L05: IW.05.04 Kitchen/Living (M)	2	PASS	L03: IW.03.03 Bedroom 2 (M)	1.9	PASS	L10: IW.10.05 Bedroom 1 (M)	1.3	PASS			
L05: IW.05.05 Kitchen/Living (M)	2.8	PASS	L03: IW.03.04 Bedroom 1 (M)	1.7	PASS	L10: IW.10.05 Bedroom 2 (M)	1.5	PASS			
L05: IW.05.09 Kitchen/Living (M)	2	PASS	L03: IW.03.04 Bedroom 2 (M)	1.7	PASS	L10: IW.10.08 Bedroom (M)	2.1	PASS			
L06: IW.06.01 Kitchen/Living (M)	3	PASS	L03: IW.03.05 Bedroom 1 (M)	1.9	PASS	L11: IW.11.01 Bedroom 1 (M)	2	PASS			
L06: IW.06.02 Kitchen/Living (M)	3	PASS	L03: IW.03.05 Bedroom 2 (M)	2.1	PASS	L11: IW.11.01 Bedroom 2 (M)	2.3	PASS			
L06: IW.06.03 Kitchen/Living (M)	2.2	PASS	L03: IW.03.09 Bedroom (M)	2	PASS	L11: IW.11.02 Bedroom 1 (M)	1.9	PASS			
L06: IW.06.04 Kitchen/Living (M)	2	PASS	L04: IW.04.01 Bedroom 1 (M)	1.9	PASS	L11: IW.11.02 Bedroom 2 (M)	2.2	PASS			
L06: IW.06.05 Kitchen/Living (M)	2.8	PASS	L04: IW.04.01 Bedroom 2 (M)	2.2	PASS	L11: IW.11.03 Bedroom 1 (M)	1.8	PASS			
L06: IW.06.09 Kitchen/Living (M)	2	PASS	L04: IW.04.02 Bedroom 1 (M)	2	PASS	L11: IW.11.03 Bedroom 2 (M)	2	PASS			
L07: IW.07.01 Kitchen/Living (M)	3	PASS	L04: IW.04.02 Bedroom 2 (M)	2.3	PASS	L11: IW.11.04 Bedroom (M)	2	PASS			
L07: IW.07.02 Kitchen/Living (M)	3	PASS	L04: IW.04.03 Bedroom 1 (M)	1.9	PASS	L12: IW.12.01 Bedroom 1 (M)	1.5	PASS			
L07: IW.07.03 Kitchen/Living (M)	2.2	PASS	L04: IW.04.03 Bedroom 2 (M)	2	PASS	L12: IW.12.01 Bedroom 2 (M)	1.9	PASS			
L07: IW.07.04 Kitchen/Living (M)	2	PASS	L04: IW.04.04 Bedroom 1 (M)	1.7	PASS	L12: IW.12.02 Bedroom 1 (M)	1.6	PASS			
L07: IW.07.05 Kitchen/Living (M)	2.8	PASS	L04: IW.04.04 Bedroom 2 (M)	1.8	PASS	L12: IW.12.02 Bedroom 2 (M)	1.9	PASS			
L07: IW.07.08 Kitchen/Living (M)	2	PASS	L04: IW.04.05 Bedroom 1 (M)	2	PASS	L12: IW.12.03 Bedroom 1 (M)	1.5	PASS			
L08: IW.08.01 Kitchen/Living (M)	3	PASS	L04: IW.04.05 Bedroom 2 (M)	2.2	PASS	L12: IW.12.03 Bedroom 2 (M)	1.7	PASS			
L08: IW.08.02 Kitchen/Living (M)	3	PASS	L04: IW.04.09 Bedroom (M)	2.2	PASS	L12: IW.12.04 Bedroom (M)	1.5	PASS			
L08: IW.08.03 Kitchen/Living (M)	2.2	PASS	L05: IW.05.01 Bedroom 1 (M)	2.1	PASS	L13: IW.13.01 Bedroom 1 (M)	1.5	PASS			
L08: IW.08.04 Kitchen/Living (M)	2	PASS	L05: IW.05.01 Bedroom 2 (M)	2.3	PASS	L13: IW.13.01 Bedroom 2 (M)	1.8	PASS			
L08: IW.08.05 Kitchen/Living (M)	2.8	PASS	L05: IW.05.02 Bedroom 1 (M)	2	PASS	L13: IW.13.02 Bedroom 1 (M)	1.5	PASS			
L08: IW.08.08 Kitchen/Living (M)	2	PASS	L05: IW.05.02 Bedroom 2 (M)	2.3	PASS	L13: IW.13.02 Bedroom 2 (M)	1.8	PASS			
L09: IW.09.01 Kitchen/Living (M)	3	PASS	L05: IW.05.03 Bedroom 1 (M)	1.9	PASS	L13: IW.13.03 Bedroom 1 (M)	1.4	PASS			
L09: IW.09.02 Kitchen/Living (M)	3	PASS	L05: IW.05.03 Bedroom 2 (M)	2	PASS	L13: IW.13.03 Bedroom 2 (M)	1.6	PASS			
L09: IW.09.03 Kitchen/Living (M)	2.2	PASS	L05: IW.05.04 Bedroom 1 (M)	1.7	PASS	L13: IW.13.04 Bedroom (M)	1.4	PASS			
L09: IW.09.04 Kitchen/Living (M)	1.9	PASS	L05: IW.05.04 Bedroom 2 (M)	1.8	PASS	L14: IW.14.01 Bedroom 1 (M)	1.4	PASS			
L09: IW.09.05 Kitchen/Living (M)	2.5	PASS	L05: IW.05.05 Bedroom 1 (M)	2	PASS	L14: IW.14.01 Bedroom 2 (M)	1.8	PASS			
L09: IW.09.08 Kitchen/Living (M)	2	PASS	L05: IW.05.05 Bedroom 2 (M)	2.2	PASS	L14: IW.14.02 Bedroom 1 (M)	1.4	PASS			
L10: IW.10.01 Kitchen/Living (M)	2.8	PASS	L05: IW.05.09 Bedroom (M)	2	PASS	L14: IW.14.02 Bedroom 2 (M)	1.7	PASS			
L10: IW.10.02 Kitchen/Living (M)	2.8	PASS	L06: IW.06.01 Bedroom 1 (M)	2.1	PASS	L14: IW.14.03 Bedroom 1 (M)	1.4	PASS			
L10: IW.10.03 Kitchen/Living (M)	2.1	PASS	L06: IW.06.01 Bedroom 2 (M)	2.4	PASS	L14: IW.14.03 Bedroom 2 (M)	1.6	PASS			
L10: IW.10.04 Kitchen/Living (M)	1.8	PASS	L06: IW.06.02 Bedroom 1 (M)	2	PASS	L14: IW.14.04 Bedroom (M)	1.4	PASS			
L10: IW.10.05 Kitchen/Living (M)	2.1	PASS	L06: IW.06.02 Bedroom 2 (M)	2.3	PASS	L15: IW.15.01 Bedroom 1 (M)	1.3	PASS			
L10: IW.10.08 Kitchen/Living (M)	2	PASS	L06: IW.06.03 Bedroom 1 (M)	1.9	PASS	L15: IW.15.01 Bedroom 2 (M)	1.6	PASS			
L11: IW.11.01 Kitchen/Living (M)	3	PASS	L06: IW.06.03 Bedroom 2 (M)	2	PASS	L15: IW.15.02 Bedroom 1 (M)	1.2	PASS			
L11: IW.11.02 Kitchen/Living (M)	3	PASS	L06: IW.06.04 Bedroom 1 (M)	1.7	PASS	L15: IW.15.02 Bedroom 2 (M)	1.5	PASS			
L11: IW.11.03 Kitchen/Living (M)	2.4	PASS	L06: IW.06.04 Bedroom 2 (M)	1.8	PASS	L15: IW.15.03 Bedroom 1 (M)	1.2	PASS			
L11: IW.11.04 Kitchen/Living (M)	1.9	PASS	L06: IW.06.05 Bedroom 1 (M)	2	PASS	L15: IW.15.03 Bedroom 2 (M)	1.4	PASS			
L12: IW.12.01 Kitchen/Living (M)	2.7	PASS	L06: IW.06.05 Bedroom 2 (M)	2.2	PASS	L15: IW.15.04 Bedroom (M)	1.3	PASS			
L12: IW.12.02 Kitchen/Living (M)	2.7	PASS	L06: IW.06.09 Bedroom (M)	2	PASS						
L12: IW.12.03 Kitchen/Living (M)	2.3	PASS	L07: IW.07.01 Bedroom 1 (M)	2.1	PASS						
L12: IW.12.04 Kitchen/Living (M)	1.9	PASS	L07: IW.07.01 Bedroom 2 (M)	2.4	PASS						
L13: IW.13.01 Kitchen/Living (M)	2.6	PASS	L07: IW.07.02 Bedroom 1 (M)	2.1	PASS						
L13: IW.13.02 Kitchen/Living (M)	2.6	PASS	L07: IW.07.02 Bedroom 2 (M)	2.3	PASS						
L13: IW.13.03 Kitchen/Living (M)	2.3	PASS	L07: IW.07.03 Bedroom 1 (M)	1.9	PASS						
L13: IW.13.04 Kitchen/Living (M)	1.8	PASS	L07: IW.07.03 Bedroom 2 (M)	2	PASS						
L14: IW.14.01 Kitchen/Living (M)	2.7	PASS	L07: IW.07.04 Bedroom 1 (M)	1.7	PASS						
L14: IW.14.02 Kitchen/Living (M)	2.6	PASS	L07: IW.07.04 Bedroom 2 (M)	1.8	PASS						
L14: IW.14.03 Kitchen/Living (M)	2.3	PASS	L07: IW.07.05 Bedroom 1 (M)	2	PASS						
L14: IW.14.04 Kitchen/Living (M)	1.8	PASS	L07: IW.07.05 Bedroom 2 (M)	2.2	PASS						
L15: IW.15.01 Kitchen/Living (M)	2.4	PASS	L07: IW.07.08 Bedroom (M)	2	PASS						
L15: IW.15.02 Kitchen/Living (M)	2.4	PASS	L08: IW.08.01 Bedroom 1 (M)	2.1	PASS						
L15: IW.15.03 Kitchen/Living (M)	2.1	PASS	L08: IW.08.01 Bedroom 2 (M)	2.4	PASS						
L15: IW.15.04 Kitchen/Living (M)	1.6	PASS	L08: IW.08.02 Bedroom 1 (M)	2.1	PASS						



Corridors

Natural Ventilation

Corridor name	No. hours > 28°C	% Annual hours > 28°C	Significant overheating risk?
L01: Corridor	0	0	No
L01: Stairs	0	0	No
L02: Corridor	0	0	No
L02: Stairs	0	0	No
L03: Corridor	0	0	No
L03: Stairs	0	0	No
L04: Corridor	0	0	No
L04: Stairs	0	0	No
L05: Corridor	0	0	No
L05: Stairs	0	0	No
L06: Corridor	0	0	No
L06: Stairs	0	0	No
L07: Corridor	0	0	No
L07: Stairs	0	0	No
L08: Corridor	0	0	No
L08: Stairs	0	0	No
L09: Corridor	0	0	No
L09: Stairs	0	0	No
L10: Corridor	0	0	No
L10: Stairs	0	0	No
L11: Corridor	0	0	No
L11: Stairs	0	0	No
L12: Corridor	2	0	No
L12: Stairs	0	0	No
L13: Corridor	2	0	No
L13: Stairs	0	0	No
L14: Corridor	2	0	No
L14: Stairs	0	0	No
L15: Corridor	2	0	No
L15: Stairs	0	0	No



Apartments
Natural Ventilation
(excluding Internal Blinds)

SUMMARY

CRITERION A

CRITERION B

	Natvent criterion (a)	Natvent criterion (b)		Occupied	No. hours ΔT	% Occupied hours ΔT ≥		No. hours > 26°C 22:00-	No. hours > 26°C 00:00-	Total hours >	
Natvent room name	result	result	Pass/Fail	hours	≥ 1°K	1°K	Pass/Fail	24:00	07:00	26°C	Pass/Fail
L01: IW.01.06 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	8	3	11	Pass
L01: IW.01.06 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L01: IW.01.07 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	7	3	10	Pass
L01: IW.01.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L01: IW.01.08 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	8	3	11	Pass
L01: IW.01.08 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L02: IW.02.06 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	13	10	23	Pass
L02: IW.02.06 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L02: IW.02.07 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	13	10	23	Pass
L02: IW.02.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L02: IW.02.08 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	13	10	23	Pass
L02: IW.02.08 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L03: IW.03.06 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	15	13	28	Pass
L03: IW.03.06 Kitchen/Living (N)	Pass	NA	Pass	1989	1	0.1	Pass	NA	NA	NA	NA
L03: IW.03.07 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	14	12	26	Pass
L03: IW.03.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L03: IW.03.08 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	13	12	25	Pass
L03: IW.03.08 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L04: IW.04.06 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	15	13	28	Pass
L04: IW.04.06 Kitchen/Living (N)	Pass	NA	Pass	1989	1	0.1	Pass	NA	NA	NA	NA
L04: IW.04.07 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	14	12	26	Pass
L04: IW.04.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L04: IW.04.08 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	13	12	25	Pass
L04: IW.04.08 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L05: IW.05.06 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	15	12	27	Pass
L05: IW.05.06 Kitchen/Living (N)	Pass	NA	Pass	1989	1	0.1	Pass	NA	NA	NA	NA
L05: IW.05.07 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	14	12	26	Pass
L05: IW.05.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L05: IW.05.08 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	13	12	25	Pass
L05: IW.05.08 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L06: IW.06.06 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	15	12	27	Pass
L06: IW.06.06 Kitchen/Living (N)	Pass	NA	Pass	1989	1	0.1	Pass	NA	NA	NA	NA
L06: IW.06.07 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	14	13	27	Pass
L06: IW.06.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L06: IW.06.08 Bedroom (N)	Pass	Pass	Pass	3672	0	0	Pass	14	12	26	Pass
L06: IW.06.08 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L07: IW.07.06 Bedroom 1 (N)	Pass	Pass	Pass	3672	0	0	Pass	14	17	31	Pass
L07: IW.07.06 Bedroom 2 (N)	Pass	Pass	Pass	3672	0	0	Pass	15	17	32	Pass
L07: IW.07.06 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L07: IW.07.07 Bedroom 1 (N)	Pass	Pass	Pass	3672	0	0	Pass	14	17	31	Pass
L07: IW.07.07 Bedroom 2 (N)	Pass	Pass	Pass	3672	0	0	Pass	15	16	31	Pass
L07: IW.07.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L08: IW.08.06 Bedroom 1 (N)	Pass	Pass	Pass	3672	0	0	Pass	15	17	32	Pass
L08: IW.08.06 Bedroom 2 (N)	Pass	Pass	Pass	3672	0	0	Pass	15	17	32	Pass
L08: IW.08.06 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L08: IW.08.07 Bedroom 1 (N)	Pass	Pass	Pass	3672	0	0	Pass	15	17	32	Pass
L08: IW.08.07 Bedroom 2 (N)	Pass	Pass	Pass	3672	0	0	Pass	16	16	32	Pass
L08: IW.08.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L09: IW.09.06 Bedroom 1 (N)	Pass	Fail	Fail	3672	0	0	Pass	16	26	42	Fail
L09: IW.09.06 Bedroom 2 (N)	Pass	Fail	Fail	3672	0	0	Pass	17	28	45	Fail
L09: IW.09.06 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L09: IW.09.07 Bedroom 1 (N)	Pass	Fail	Fail	3672	0	0	Pass	16	26	42	Fail
L09: IW.09.07 Bedroom 2 (N)	Pass	Fail	Fail	3672	0	0	Pass	17	27	44	Fail
L09: IW.09.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L10: IW.10.06 Bedroom 1 (N)	Pass	Fail	Fail	3672	0	0	Pass	15	19	34	Fail
L10: IW.10.06 Bedroom 2 (N)	Pass	Pass	Pass	3672	0	0	Pass	15	17	32	Pass
L10: IW.10.06 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA
L10: IW.10.07 Bedroom 1 (N)	Pass	Fail	Fail	3672	0	0	Pass	15	18	33	Fail
L10: IW.10.07 Bedroom 2 (N)	Pass	Fail	Fail	3672	0	0	Pass	15	18	33	Fail
L10: IW.10.07 Kitchen/Living (N)	Pass	NA	Pass	1989	0	0	Pass	NA	NA	NA	NA



Apartments
Mechanical Ventilation
(excluding Internal Blinds)

Room name	% Annual		
	No. hours	> 26°C	Pass/Fail
L01: IW.01.01 Bedroom 1 (M)	119	1.4	Pass
L01: IW.01.01 Bedroom 2 (M)	159	1.8	Pass
L01: IW.01.01 Kitchen/Living (M)	150	3.2	Fail
L01: IW.01.02 Bedroom 1 (M)	167	1.9	Pass
L01: IW.01.02 Bedroom 2 (M)	213	2.4	Pass
L01: IW.01.02 Kitchen/Living (M)	172	3.6	Fail
L01: IW.01.03 Bedroom 1 (M)	148	1.7	Pass
L01: IW.01.04 Bedroom 2 (M)	154	1.8	Pass
L01: IW.01.03 Kitchen/Living (M)	86	1.8	Pass
L01: IW.01.04 Bedroom 1 (M)	96	1.1	Pass
L01: IW.01.04 Bedroom 2 (M)	117	1.3	Pass
L01: IW.01.04 Kitchen/Living (M)	76	1.6	Pass
L01: IW.01.05 Bedroom 1 (M)	102	1.2	Pass
L01: IW.01.05 Bedroom 2 (M)	132	1.5	Pass
L01: IW.01.05 Kitchen/Living (M)	95	2	Pass
L01: IW.01.09 Bedroom (M)	133	1.5	Pass
L01: IW.01.09 Kitchen/Living (M)	74	1.6	Pass
L02: IW.02.01 Bedroom 1 (M)	195	2.2	Pass
L02: IW.02.01 Bedroom 2 (M)	220	2.5	Pass
L02: IW.02.01 Kitchen/Living (M)	168	3.5	Fail
L02: IW.02.02 Bedroom 1 (M)	227	2.6	Pass
L02: IW.02.02 Bedroom 2 (M)	263	3	Pass
L02: IW.02.02 Kitchen/Living (M)	192	4	Fail
L02: IW.02.03 Bedroom 1 (M)	196	2.2	Pass
L02: IW.02.03 Bedroom 2 (M)	204	2.3	Pass
L02: IW.02.03 Kitchen/Living (M)	113	2.4	Pass
L02: IW.02.04 Bedroom 1 (M)	170	1.9	Pass
L02: IW.02.04 Bedroom 2 (M)	182	2.1	Pass
L02: IW.02.04 Kitchen/Living (M)	100	2.1	Pass
L02: IW.02.05 Bedroom 1 (M)	186	2.1	Pass
L02: IW.02.05 Bedroom 2 (M)	214	2.4	Pass
L02: IW.02.05 Kitchen/Living (M)	141	3	Pass
L02: IW.02.09 Bedroom (M)	247	2.8	Pass
L02: IW.02.09 Kitchen/Living (M)	128	2.7	Pass
L03: IW.03.01 Bedroom 1 (M)	238	2.7	Pass
L03: IW.03.01 Bedroom 2 (M)	282	3.2	Fail
L03: IW.03.01 Kitchen/Living (M)	186	3.9	Fail
L03: IW.03.02 Bedroom 1 (M)	243	2.8	Pass
L03: IW.03.02 Bedroom 2 (M)	275	3.1	Fail
L03: IW.03.02 Kitchen/Living (M)	193	4.1	Fail
L03: IW.03.03 Bedroom 1 (M)	214	2.4	Pass
L03: IW.03.03 Bedroom 2 (M)	218	2.5	Pass
L03: IW.03.03 Kitchen/Living (M)	125	2.6	Pass
L03: IW.03.04 Bedroom 1 (M)	190	2.2	Pass
L03: IW.03.04 Bedroom 2 (M)	203	2.3	Pass
L03: IW.03.04 Kitchen/Living (M)	110	2.3	Pass
L03: IW.03.05 Bedroom 1 (M)	214	2.4	Pass
L03: IW.03.05 Bedroom 2 (M)	233	2.7	Pass
L03: IW.03.05 Kitchen/Living (M)	148	3.1	Fail
L03: IW.03.09 Bedroom (M)	286	3.3	Fail
L03: IW.03.09 Kitchen/Living (M)	149	3.1	Fail
L04: IW.04.01 Bedroom 1 (M)	266	3	Pass
L04: IW.04.01 Bedroom 2 (M)	317	3.6	Fail
L04: IW.04.01 Kitchen/Living (M)	205	4.3	Fail
L04: IW.04.02 Bedroom 1 (M)	244	2.8	Pass
L04: IW.04.02 Bedroom 2 (M)	277	3.2	Fail
L04: IW.04.02 Kitchen/Living (M)	193	4.1	Fail
L04: IW.04.03 Bedroom 1 (M)	222	2.5	Pass
L04: IW.04.03 Bedroom 2 (M)	221	2.5	Pass
L04: IW.04.03 Kitchen/Living (M)	126	2.7	Pass
L04: IW.04.04 Bedroom 1 (M)	197	2.2	Pass
L04: IW.04.04 Bedroom 2 (M)	206	2.4	Pass
L04: IW.04.04 Kitchen/Living (M)	113	2.4	Pass
L04: IW.04.05 Bedroom 1 (M)	221	2.5	Pass
L04: IW.04.05 Bedroom 2 (M)	239	2.7	Pass
L04: IW.04.05 Kitchen/Living (M)	151	3.2	Fail
L04: IW.04.09 Bedroom (M)	305	3.5	Fail
L04: IW.04.09 Kitchen/Living (M)	155	3.3	Fail
L05: IW.05.01 Bedroom 1 (M)	282	3.2	Fail
L05: IW.05.01 Bedroom 2 (M)	337	3.8	Fail
L05: IW.05.01 Kitchen/Living (M)	222	4.7	Fail
L05: IW.05.02 Bedroom 1 (M)	244	2.8	Pass
L05: IW.05.02 Bedroom 2 (M)	278	3.2	Fail
L05: IW.05.02 Kitchen/Living (M)	194	4.1	Fail
L05: IW.05.03 Bedroom 1 (M)	223	2.5	Pass
L05: IW.05.03 Bedroom 2 (M)	222	2.5	Pass
L05: IW.05.03 Kitchen/Living (M)	126	2.7	Pass
L05: IW.05.04 Bedroom 1 (M)	200	2.3	Pass
L05: IW.05.04 Bedroom 2 (M)	207	2.4	Pass
L05: IW.05.04 Kitchen/Living (M)	113	2.4	Pass
L05: IW.05.05 Bedroom 1 (M)	223	2.5	Pass
L05: IW.05.05 Bedroom 2 (M)	241	2.8	Pass
L05: IW.05.05 Kitchen/Living (M)	152	3.2	Fail
L05: IW.05.09 Bedroom (M)	279	3.2	Fail
L05: IW.05.09 Kitchen/Living (M)	153	3.2	Fail

Room name	% Annual		
	No. hours	> 26°C	Pass/Fail
L06: IW.06.01 Bedroom 1 (M)	284	3.2	Fail
L06: IW.06.01 Bedroom 2 (M)	343	3.9	Fail
L06: IW.06.01 Kitchen/Living (M)	231	4.9	Fail
L06: IW.06.02 Bedroom 1 (M)	244	2.8	Pass
L06: IW.06.02 Bedroom 2 (M)	279	3.2	Fail
L06: IW.06.02 Kitchen/Living (M)	195	4.1	Fail
L06: IW.06.03 Bedroom 1 (M)	223	2.5	Pass
L06: IW.06.03 Bedroom 2 (M)	222	2.5	Pass
L06: IW.06.03 Kitchen/Living (M)	127	2.7	Pass
L06: IW.06.04 Bedroom 1 (M)	204	2.3	Pass
L06: IW.06.04 Bedroom 2 (M)	207	2.4	Pass
L06: IW.06.04 Kitchen/Living (M)	113	2.4	Pass
L06: IW.06.05 Bedroom 1 (M)	225	2.6	Pass
L06: IW.06.05 Bedroom 2 (M)	249	2.8	Pass
L06: IW.06.05 Kitchen/Living (M)	154	3.2	Fail
L06: IW.06.09 Bedroom (M)	281	3.2	Fail
L06: IW.06.09 Kitchen/Living (M)	155	3.3	Fail
L07: IW.07.01 Bedroom 1 (M)	284	3.2	Fail
L07: IW.07.01 Bedroom 2 (M)	343	3.9	Fail
L07: IW.07.01 Kitchen/Living (M)	225	4.7	Fail
L07: IW.07.02 Bedroom 1 (M)	244	2.8	Pass
L07: IW.07.02 Bedroom 2 (M)	279	3.2	Fail
L07: IW.07.02 Kitchen/Living (M)	195	4.1	Fail
L07: IW.07.03 Bedroom 1 (M)	223	2.5	Pass
L07: IW.07.03 Bedroom 2 (M)	222	2.5	Pass
L07: IW.07.03 Kitchen/Living (M)	128	2.7	Pass
L07: IW.07.04 Bedroom 1 (M)	200	2.3	Pass
L07: IW.07.04 Bedroom 2 (M)	207	2.4	Pass
L07: IW.07.04 Kitchen/Living (M)	113	2.4	Pass
L07: IW.07.05 Bedroom 1 (M)	225	2.6	Pass
L07: IW.07.05 Bedroom 2 (M)	250	2.9	Pass
L07: IW.07.05 Kitchen/Living (M)	158	3.3	Fail
L07: IW.07.08 Bedroom (M)	279	3.2	Fail
L07: IW.07.08 Kitchen/Living (M)	153	3.2	Fail
L08: IW.08.01 Bedroom 1 (M)	284	3.2	Fail
L08: IW.08.01 Bedroom 2 (M)	342	3.9	Fail
L08: IW.08.01 Kitchen/Living (M)	225	4.7	Fail
L08: IW.08.02 Bedroom 1 (M)	244	2.8	Pass
L08: IW.08.02 Bedroom 2 (M)	278	3.2	Fail
L08: IW.08.02 Kitchen/Living (M)	195	4.1	Fail
L08: IW.08.03 Bedroom 1 (M)	223	2.5	Pass
L08: IW.08.03 Bedroom 2 (M)	222	2.5	Pass
L08: IW.08.03 Kitchen/Living (M)	127	2.7	Pass
L08: IW.08.04 Bedroom 1 (M)	187	2.1	Pass
L08: IW.08.04 Bedroom 2 (M)	204	2.3	Pass
L08: IW.08.04 Kitchen/Living (M)	111	2.3	Pass
L08: IW.08.05 Bedroom 1 (M)	217	2.5	Pass
L08: IW.08.05 Bedroom 2 (M)	243	2.8	Pass
L08: IW.08.05 Kitchen/Living (M)	157	3.3	Fail
L08: IW.08.08 Bedroom (M)	279	3.2	Fail
L08: IW.08.08 Kitchen/Living (M)	152	3.2	Fail
L09: IW.09.01 Bedroom 1 (M)	283	3.2	Fail
L09: IW.09.01 Bedroom 2 (M)	341	3.9	Fail
L09: IW.09.01 Kitchen/Living (M)	221	4.7	Fail
L09: IW.09.02 Bedroom 1 (M)	243	2.8	Pass
L09: IW.09.02 Bedroom 2 (M)	273	3.1	Fail
L09: IW.09.02 Kitchen/Living (M)	193	4.1	Fail
L09: IW.09.03 Bedroom 1 (M)	219	2.5	Pass
L09: IW.09.03 Bedroom 2 (M)	221	2.5	Pass
L09: IW.09.03 Kitchen/Living (M)	125	2.6	Pass
L09: IW.09.04 Bedroom 1 (M)	155	1.8	Pass
L09: IW.09.04 Bedroom 2 (M)	167	1.9	Pass
L09: IW.09.04 Kitchen/Living (M)	103	2.2	Pass
L09: IW.09.05 Bedroom 1 (M)	174	2	Pass
L09: IW.09.05 Bedroom 2 (M)	197	2.2	Pass
L09: IW.09.05 Kitchen/Living (M)	145	3.1	Fail
L09: IW.09.08 Bedroom (M)	280	3.2	Fail
L09: IW.09.08 Kitchen/Living (M)	152	3.2	Fail
L10: IW.10.01 Bedroom 1 (M)	281	3.2	Fail
L10: IW.10.01 Bedroom 2 (M)	336	3.8	Fail
L10: IW.10.01 Kitchen/Living (M)	212	4.5	Fail
L10: IW.10.02 Bedroom 1 (M)	236	2.7	Pass
L10: IW.10.02 Bedroom 2 (M)	262	3	Pass
L10: IW.10.02 Kitchen/Living (M)	177	3.7	Fail
L10: IW.10.03 Bedroom 1 (M)	214	2.4	Pass
L10: IW.10.03 Bedroom 2 (M)	217	2.5	Pass
L10: IW.10.03 Kitchen/Living (M)	123	2.6	Pass
L10: IW.10.04 Bedroom 1 (M)	127	1.4	Pass
L10: IW.10.04 Bedroom 2 (M)	139	1.6	Pass
L10: IW.10.04 Kitchen/Living (M)	91	1.9	Pass
L10: IW.10.05 Bedroom 1 (M)	143	1.6	Pass
L10: IW.10.05 Bedroom 2 (M)	174	2	Pass
L10: IW.10.05 Kitchen/Living (M)	129	2.7	Pass
L10: IW.10.08 Bedroom (M)	313	3.6	Fail
L10: IW.10.08 Kitchen/Living (M)	153	3.2	Fail

Room name	% Annual		
	No. hours	> 26°C	Pass/Fail
L11: IW.11.01 Bedroom 1 (M)	274	3.1	Fail
L11: IW.11.01 Bedroom 2 (M)	331	3.8	Fail
L11: IW.11.01 Kitchen/Living (M)	225	4.7	Fail
L11: IW.11.02 Bedroom 1 (M)	227	2.6	Pass
L11: IW.11.02 Bedroom 2 (M)	265	3	Pass
L11: IW.11.02 Kitchen/Living (M)	189	4	Fail
L11: IW.11.03 Bedroom 1 (M)	208	2.4	Pass
L11: IW.11.03 Bedroom 2 (M)	219	2.5	Pass
L11: IW.11.03 Kitchen/Living (M)	137	2.9	Pass
L11: IW.11.04 Bedroom (M)	297	3.4	Fail
L11: IW.11.04 Kitchen/Living (M)	140	3	Pass
L12: IW.12.01 Bedroom 1 (M)	228	2.6	Pass
L12: IW.12.01 Bedroom 2 (M)	266	3	Pass
L12: IW.12.01 Kitchen/Living (M)	198	4.2	Fail
L12: IW.12.02 Bedroom 1 (M)	180	2.1	Pass
L12: IW.12.02 Bedroom 2 (M)	218	2.5	Pass
L12: IW.12.02 Kitchen/Living (M)	176	3.7	Fail
L12: IW.12.03 Bedroom 1 (M)	172	2	Pass
L12: IW.12.03 Bedroom 2 (M)	186	2.1	Pass
L12: IW.12.03 Kitchen/Living (M)	132	2.8	Pass
L12: IW.12.04 Bedroom (M)	211	2.4	Pass
L12: IW.12.04 Kitchen/Living (M)	133	2.8	Pass
L13: IW.13.01 Bedroom 1 (M)	217	2.5	Pass
L13: IW.13.01 Bedroom 2 (M)	255	2.9	Pass
L13: IW.13.01 Kitchen/Living (M)	194	4.1	Fail
L13: IW.13.02 Bedroom 1 (M)	172	2	Pass
L13: IW.13.02 Bedroom 2 (M)	213	2.4	Pass
L13: IW.13.02 Kitchen/Living (M)	170	3.6	Fail
L13: IW.13.03 Bedroom 1 (M)	159	1.8	Pass
L13: IW.13.03 Bedroom 2 (M)	179	2	Pass
L13: IW.13.03 Kitchen/Living (M)	128	2.7	Pass
L13: IW.13.04 Bedroom (M)	199	2.3	Pass
L13: IW.13.04 Kitchen/Living (M)	127	2.7	Pass
L14: IW.14.01 Bedroom 1 (M)	207	2.4	Pass
L14: IW.14.01 Bedroom 2 (M)	250	2.9	Pass
L14: IW.14.01 Kitchen/Living (M)	196	4.1	Fail
L14: IW.14.02 Bedroom 1 (M)	166	1.9	Pass
L14: IW.14.02 Bedroom 2 (M)	205	2.3	Pass
L14: IW.14.02 Kitchen/Living (M)	164	3.5	Fail
L14: IW.14.03 Bedroom 1 (M)	153	1.7	Pass
L14: IW.14.03 Bedroom 2 (M)	175	2	Pass
L14: IW.14.03 Kitchen/Living (M)	126	2.7	Pass
L14: IW.14.04 Bedroom (M)	188	2.1	Pass
L14: IW.14.04 Kitchen/Living (M)	122	2.6	Pass
L15: IW.15.01 Bedroom 1 (M)	180	2.1	Pass
L15: IW.15.01 Bedroom 2 (M)	217	2.5	Pass
L15: IW.15.01 Kitchen/Living (M)	178	3.8	Fail
L15: IW.15.02 Bedroom 1 (M)	136	1.6	Pass
L15: IW.15.02 Bedroom 2 (M)	173	2	Pass
L15: IW.15.02 Kitchen/Living (M)	140	3	Pass
L15: IW.15.03 Bedroom 1 (M)	134	1.5	Pass
L15: IW.15.03 Bedroom 2 (M)	154	1.8	Pass
L15: IW.15.03 Kitchen/Living (M)	110	2.3	Pass
L15: IW.15.04 Bedroom (M)	163	1.9	Pass
L15: IW.15.04 Kitchen/Living (M)	113	2.4	Pass