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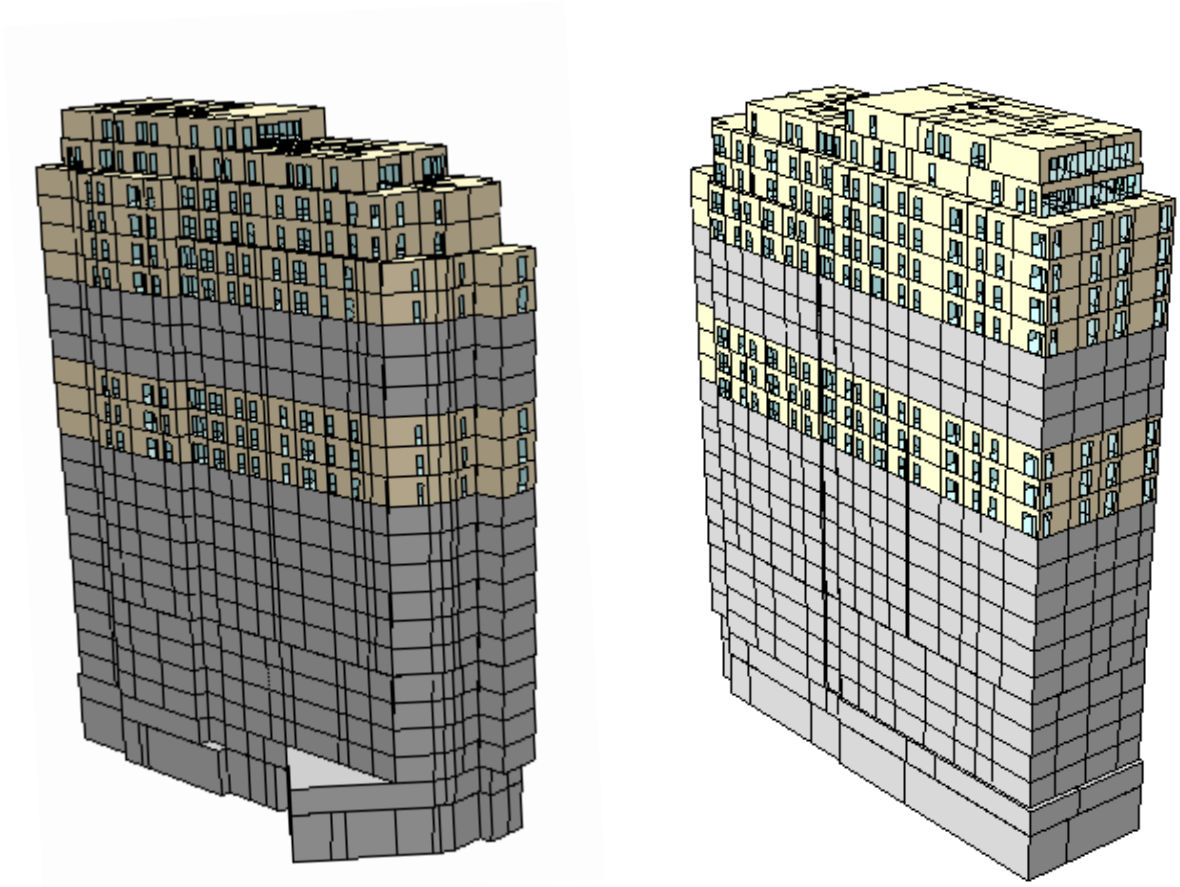

Cornbrook, Manchester

Summertime Internal Environment Report
Including Ventilation Statement

CIBSE TM59 Overheating Analysis

17/01/2024

QA
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Executive Summary

This report assesses the risk of overheating for the proposed Cornbrook residential development. Sample floor plates were taken from the bottom, middle and top level of the development.

CIBSE TM59 methodology has been utilised to assess the overheating risk within a relevant selection of units. Compliance with TM59 minimum criteria has been analysed using the Manchester weather Centre data. Current scenario weather files were considered with the possibility of considering future weather files at further stages.

It is understood that certain facades are exposed to high noise levels and air quality constraints which may limit the use of natural ventilation in these apartments. This will have an adverse effect on mitigating the risk of overheating.

In consideration for these acoustic measures, opening of the windows in each of these apartments have been restricted to the following opening times:

- Bedroom ventilation opening hours profile:
- Open 13:00-23:00 North Elevation
- Open 20:00-23:00 East/South Elevation
- Open 18:00- 23:00 South/West/North Elevation

- Living room ventilation opening profile:
- Open 13:00-23:00 North Elevation
- Open 20:00-23:00 East/South Elevation
- Open 18:00- 23:00 South/West/North Elevation

The residential development was assessed against the requirements of CIBSE TM59. The report outlines the basis of the proposals and the intended overheating mitigation strategy.

The simulation indicated that all assessed Living Rooms /Kitchens /Bedrooms passed the TM59 simulation.

The Glazing G values were simulated at 0.4 for South and East elevations, and 0.6 for North and West elevations.

The non-residential areas at Ground floor level and 01-06 shall be provided with local ceiling void mounted heat recovery mechanical ventilation systems together with heat pump heating and cooling systems to maintain comfort temperatures in these highly occupied spaces.

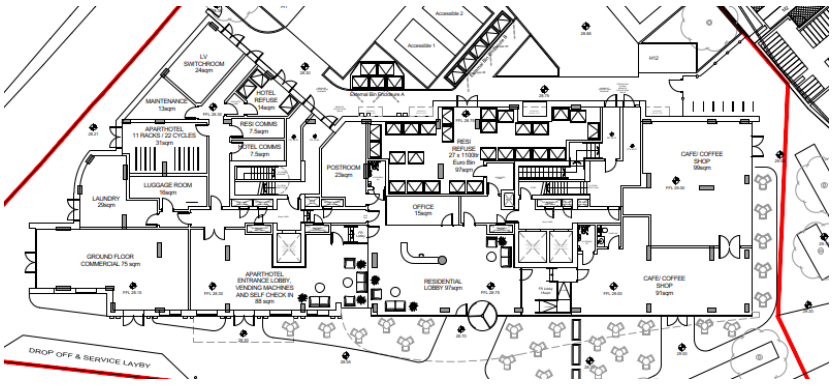
Important Notes

The free area openings stated are as required for compliance with TM59 overheating only. An assessment of the required free area for purge ventilation in line with Guide F of the building regulation is required to satisfy building control. The amenity and communal zones have not been assessed for overheating within this report and their G value will ultimately be dictated by the results of the Part L assessment for criterion 3, Limiting Solar Gain.

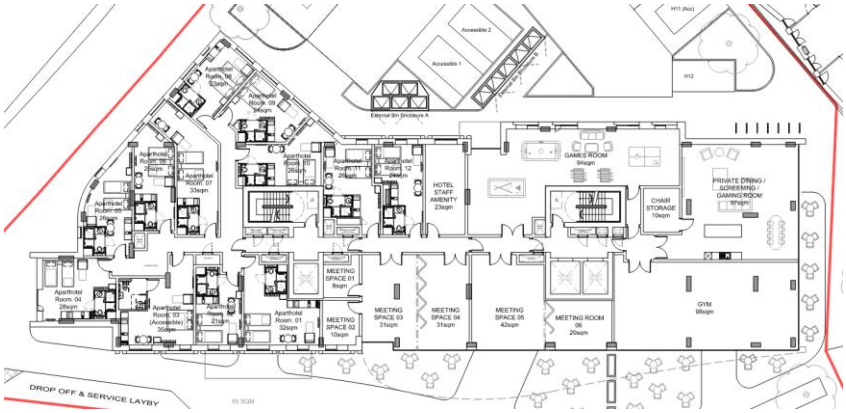
1.0 Introduction

A thermal model exercise has been undertaken to predict the internal temperatures over a typical year for the proposed residential development known as Cornbrook, Manchester. Planning permission is sought for a 24-storey mixed use building incorporating 224 residential apartments (Use Class C3), 87 apart-hotel studios (Use Class C1), amenity space, flexible commercial space (Use Class E), and café (Use Class E(b)), together with infrastructure, landscaping, and other associated works. At this stage the key areas of the development were modelled to represent the various room types, window types and orientations within the building.

Assessing overheating risk in residential developments is a complex issue. Therefore CIBSE TM59 is utilised to conduct a dynamic analysis of the residential apartments to assess overheating. This assessment aims to identify whether the proposals meet the requirements of CIBSE TM59.

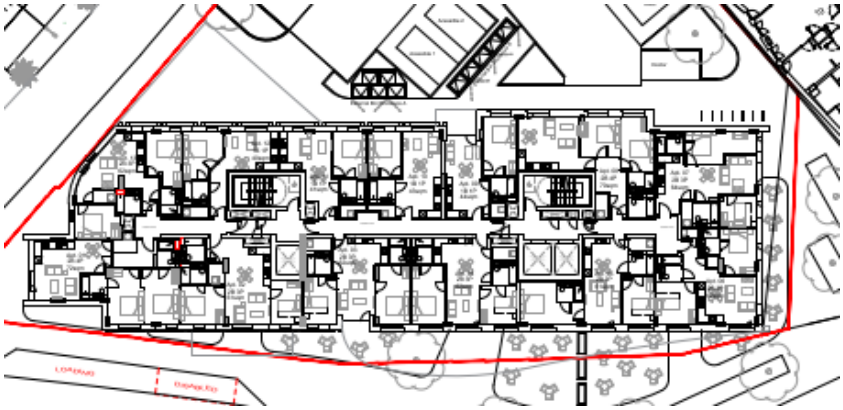


Cornbrook Ground Floor Plan



Cornbrook Floor Plan Level 01

Cornbrook Floor Plan Level 02-05



Cornbrook Floor Plan Level 06-19

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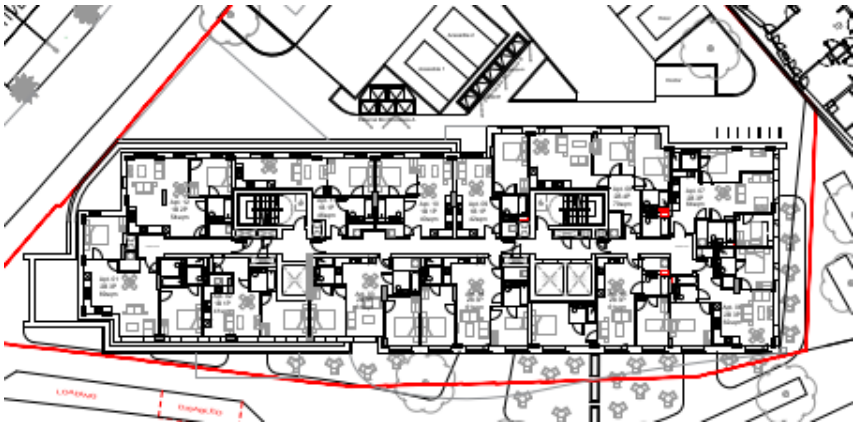
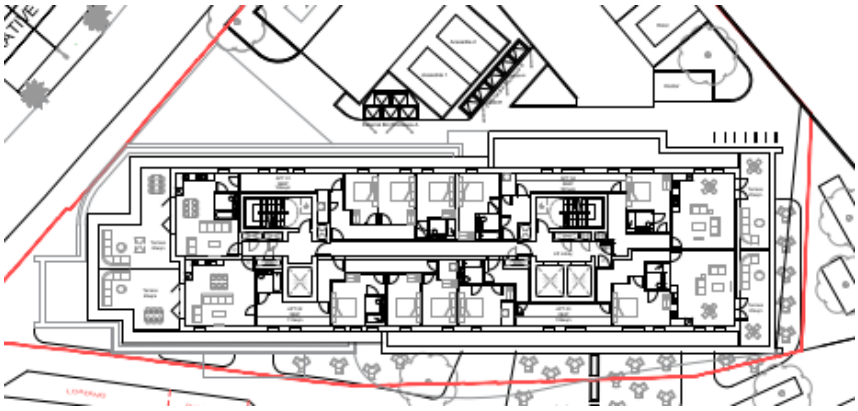
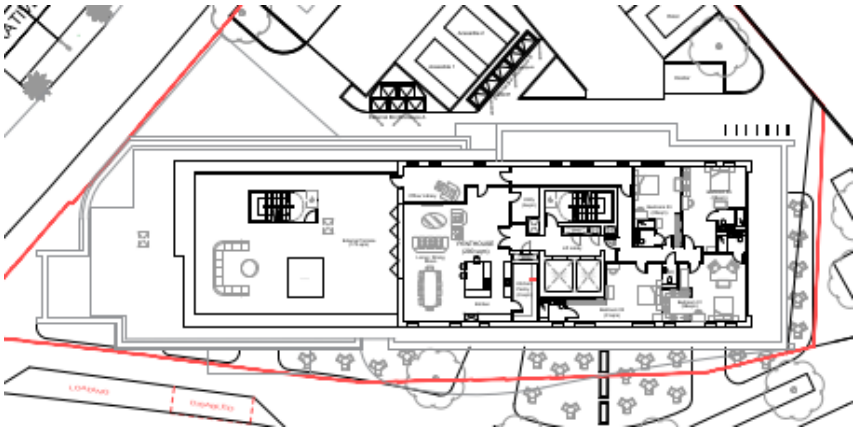


Cornbrook Floor Plan Level 20-21



Cornbrook Floor Plan Level 22



Cornbrook Floor Plan Level 23

2.0 Assessment Methodology and Criteria

TM59 Methodology

The TM59 methodology is a standardised approach to predicting overheating risk for residential building designs using dynamic thermal analysis. The aim is to produce a test that encourages good design that is comfortable within sensible limits, without being so stringent that it over promotes the use of mechanical cooling.

CIBSE TM59 also sets out profiles that represent reasonable usage patterns for a home suitable for evaluating overheating risk. The profiles are developed to test a design and do not cover all usage models.

The Methodology is intended for use by designers in order to influence building design for the better. It could be used at planning stage to assess risk, as well as at later design stages.

This methodology will:

- Allow different designs to be compared based on reasonable assumptions.
- Support design decisions that improve comfort without cooling
- Provide consistency across the industry for overheating risk prediction.

This methodology will not:

- Guarantee that people will always be comfortable in compliant spaces, however they act.
- Take into account unusual use.

The Basis of the design comfort criteria for CIBSE TM59 is:

- CIBSE TM52: Limits of thermal comfort: avoiding overheating – Provides the principles of thermal comfort.
- CIBSE Guide A: Environmental design – Includes advice regarding sleep quality.

The methodology is prescriptive so as to be consistently applied. It uses thermal modelling tools, defined internal gains profiles and specific weather files with a clearly defined thresholds to provide a clear pass/ fail result.
It is vital that the mitigation options selected as a result of the assessment are fully incorporated into the design or the assessment will have no value.

TM 59 Criteria – Homes

CIBSE TM59 sets out two different overheating criteria for different design strategies. The two strategies are:

- Buildings that are predominantly naturally ventilated
- Buildings that are predominantly mechanically ventilate

This analysis will consider the building with the windows open. As such, the assessment will consider the building as being predominantly naturally ventilated.
For homes that are predominantly naturally ventilated, two criteria apply. These are:

1. **Living Rooms, Kitchens and Bedrooms – Hours of exceedance**

   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. ΔT is defined as operative temperature less the maximum acceptable temperature. ΔT is rounded to the nearest whole degree (CIBSE TM52, criteria 1).

   This has been determined as being 110.2 hours a year or less for Bedrooms and 59.6=7 hours or less for Living/Kitchen areas.

2. **Bedrooms Only – Sleeping Conditions**

   During the sleeping hours the operative temperature in the bedroom from 11pm to 8am shall not exceed 26°C for more than 1% of annual hours. This has been determined as being 32 hours a year.

The TM59 criteria set out above provides a basis for assessing the risk of perceived overheating. The criteria above and results contained within this report are estimates of the temperatures that may be experienced in a typical year based on the CIBSE DSY1 (Design Summer Year), weather file for the 2020's, high emissions, 50% percentile scenarios.

Futureserv have created a banding category for risk of overheating, which helps to illustrate more clearly which rooms might be at a higher risk of overheating, despite potentially complying with the TM59 criteria. The banding values can be seen below.

COLOUR KEY	LOW RISK	MED RISK	HIGH RISK	OVERHEATING
Living Areas Criterion, A	<47 hrs hrs	47-52 hrs	53-59.7 hrs	>59.7 hrs
Bedroom Areas Criterion A	<88 hrs	88-98 hrs	99-110.2 hrs	>110.2 hrs
Bedroom Areas Criterion B	<25 hrs	25-27 hrs	28-32 hrs	>32 hrs

3.0 Model Settings

3.1 Software

The model was created using IES VE 2023 software. The 'Suncast' solar shading shading software has been used to model the sun path and solar shading effect for the proposed building. 'Macroflo' software has been used to simulate the natural ventilation openings using a selection of appropriate control profiles.

3.2 Drawings

The model is based on the following plans by Leach Rhodes Walker: -

- 8353-LRW-ZZ-00-DR-A-00-178_P04_Proposed Ground Floor Plan - Option 2.pdf
- 8353-LRW-ZZ-01-DR-A-00-179_P05_Proposed First Floor Plan - Option 2.pdf
- 8353-LRW-ZZ-22-DR-A-00-183_P04_Proposed Twenty-Second Floor Plan - Option 2.pdf
- 8353-LRW-ZZ-23-DR-A-00-184_P04_Proposed Twenty-Third Floor Plan - Option 2.pdf
- 8353-LRW-ZZ-B1-DR-A-00-177_P04_Proposed Basement Floor Plan - Option 2.pdf
- 8353-LRW-ZZ-RF-DR-A-00-185_P03_Proposed Roof Plan - Option 2.pdf
- 8353-LRW-ZZ-ZZ-DR-A-00-180_P07_Proposed Second to Fifth Floor Plan - Option 2.pdf
- 8353-LRW-ZZ-ZZ-DR-A-00-181_P04_Proposed Sixth to Nineteenth Floor Plan - Option 2.pdf
- 8353-LRW-ZZ-ZZ-DR-A-00-182_P04_Proposed Twentieth To Twenty-First Floor Plan - Option 2.pdf

3.3 Weather file and weather file characteristics

The Manchester DSY1 2020High50 (Design Summer Year) weather file was used as directed by TM59 methodology, as it is the closest DSY weather file to the site.

3.4 Ventilation

3.4.1 Natural ventilation

In the residential areas, all the Living/Kitchen and Bedroom are assumed to have access to natural ventilation via openable windows.

Measurements for vent openings and free areas have been taken from the plans and elevations and are based on the openable area of the panels, as opened to an angle of 30 degrees (bottom hung, outwards opening windows). Any reduction in the window free areas may affect compliance with the overheating criteria.

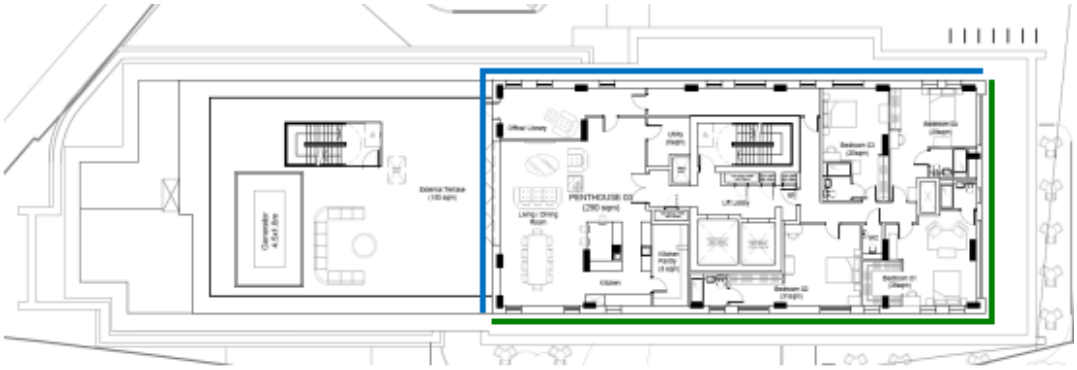
Purge ventilation is to be provided via openable windows. The Architect is responsible for ensuring that the window opening areas are sufficiently sized to achieve the building regulations Part F requirements for purge ventilation. An infiltration rate of 0.1 ach/hr has been applied to all areas as based on a targeted air permeability of 3.0m3.m2.hr@50Pa based on CIBSE guide A table 4.16.

3.4.2 Windows and Openings

Window/Panel opening is manual. Windows/panels have been set to be open when the internal temperature exceeds 22ºC. The Windows will be fully open when the internal temperature exceeds 22ºC. The opening profile has been set to operate for Bedrooms and LKDs during the daytime hours of

- Open 20:00-23:00 Red Zone
- Open 18:00-23:00 Green Zone
- Open 13:00- 23:00 Blue Zone

Levels 06-22 (Apartments)



Proposed Levels 23 (Penthouse with Private Terrace)

Vent opening restriction diagrams as provided by Jameson Acoustics

3.5 Auxiliary ventilation

The apartments also benefit from MVHR units. These supply air to the Bedroom and living spaces and extract air from the bathrooms, WC's, and kitchen areas. The bedrooms and living/kitchen/dining areas have a trickle ventilation rate as supplied by an MVHR unit. The ventilation rates have been applied as per Part F 2021 in terms of trickle and standard boost rates.

Boosted ventilation rates have then been applied to the overheating simulations to go beyond the standard Part F rates and are based on a boosted rates referenced below.

- 1 Bed apartments – 70l/s boost rate
- 2 Bed apartments – 70l/s boost rate
- 3 Bed apartments – 70l/s boost rate
- Penthouse apartment – 70l/s boost rate

Floors 22-23 require the supplied air to be cooled during summer conditions. The cooling will be provided by an ancillary unit to the MVHR. This analysis models the ancillary unit to reduce the incoming temperature by 12°C whenever the incoming air exceeds 22°C.

3.6 Internal Gains TM59

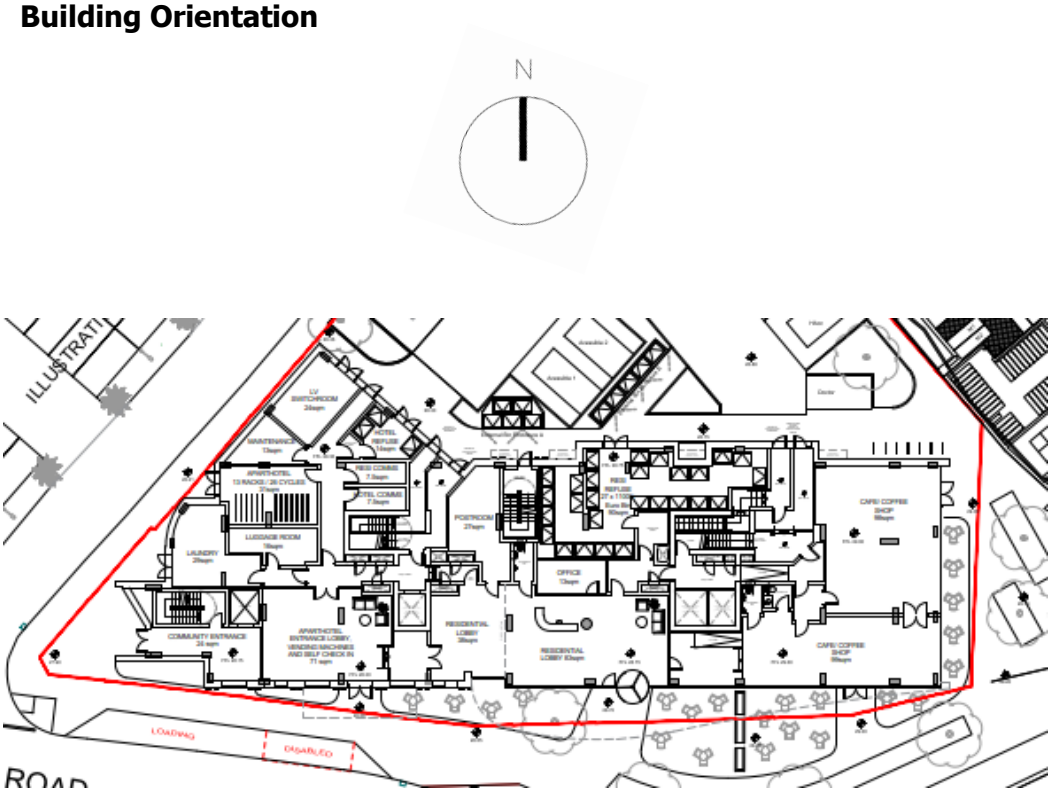
The internal gains and profiles that have been used for the internal temperature analysis model have been taken from CIBSE TM59 and are listed in appendix B.

3.7 Building Fabric Specification

The building specification used in the Initial model is as follows:

- G Value 0.4 (South and East facades)
- G Value 0.6 (North and West facades)

3.9 Building Orientation



3.10 Non-Residential Areas

The building has a number of non-residential spaces located at Ground and First floor and at Floors 02-05. These areas have a mix of amenity, aparthotel functions and will have the potential to accommodate a higher number of occupants than the residential spaces.

It is proposed to provide these areas with self-contained mechanical ventilation systems with heat recovery and the equipment for these systems will be located within the target area ceiling void connected to penetrations within the soffit or façade as appropriate.

To keep these areas cool when highly occupied a VRF heat pump cooling system will be installed with indoor units located within the area ceiling grid and condensers located in the as appropriate to the spaces they are serving.

4.0 Results

4.1 Summary of TM59 Overheating assessment Results (with blinds)

The results for the final overheating simulation can be seen in table 4.1 below.

The results from the overheating simulation, showed in the table below, indicates that each of the apartments meet with the TM59 overheating criteria.

Table 4.1 TM59 Assessment Results Table

COLOUR KEY	LOW RISK	MED RISK	HIGH RISK	OVERHEATING
Criteria 1	<2.4%	2.4 - 2.7%	2.7 - 3.0%	>3.0 %
Criteria 2	<25 hrs	25-27 hrs	28-32 hrs	>32 hrs

Room Name	Criteria 1	Criteria 2	Compliance
19_Bedroom_01_2B4P	1.8	8	Pass
19_Bedroom_01.2_2B4P	0.6	6	Pass
19_Bedroom_03_2B3P	0.4	0	Pass
19_Bedroom_02.2_2B3P	1.4	5	Pass
19_Bedroom_03_2B3P	0.4	0	Pass
19_Bedroom_03.2_2B3P	0.6	1	Pass
19_Bedroom_03_2B3P	0.4	0	Pass
19_Bedroom_04.2_2B3P	1	2	Pass
19_Bedroom_05.2_2B3P	1.1	3	Pass
19_Bedroom_03_2B3P	0	0	Pass
19_Bedroom_03_2B3P	0.5	0	Pass
19_Bedroom_06.2_2B3P	0.3	7	Pass
19_Bedroom_03_2B3P	0	0	Pass
19_Bedroom_07.2_2B3P	0	4	Pass
19_Bedroom_08.2_2B4P	0	0	Pass
19_Bedroom_08_2B4P	0	0	Pass
19_Bedroom_09_1B1P	0	0	Pass
19_Bedroom_10_1B1P	0	0	Pass
19_Bedroom_11_1B1P	0	0	Pass
19_Bedroom_12_1B1P	0	0	Pass
19_Bedroom_03_2B3P	0	0	Pass
13_Bedroom_01_2B4P	1.4	7	Pass
13_Bedroom_01.2_2B4P	0.4	3	Pass
13_Bedroom_02_2B3P	0.3	0	Pass
13_Bedroom_03_2B3P	0.4	0	Pass
13_Bedroom_03_2B3P	0.3	0	Pass
13_Bedroom_03.2_2B3P	0.1	0	Pass
13_Bedroom_04_2B3P	0.2	0	Pass
13_Bedroom_03_2B3P	0.3	0	Pass
13_Bedroom_03_2B3P	0.4	0	Pass
13_Bedroom_05_2B3P	0	0	Pass
13_Bedroom_06_2B3P	0.5	2	Pass

13_Bedroom_03_2B3P	0	0	Pass
13_Bedroom_07_2B3P	0.2	0	Pass
13_Bedroom_03_2B3P	0	0	Pass
13_Bedroom_08.2_2B4P	0	0	Pass
13_Bedroom_08_2B4P	0	0	Pass
13_Bedroom_09_1B1P	0	0	Pass
13_Bedroom_10_1B1P	0	0	Pass
13_Bedroom_11_1B1P	0	0	Pass
13_Bedroom_12_1B1P	0	0	Pass
13_Bedroom_13_2B3P	0	0	Pass
13_Bedroom_03_2B3P	0	24	Pass
22_Bedroom_02.2_3B6P	0	0	Pass
22_Bedroom_02.3_3B6P	0	0	Pass
22_Bedroom_02_3B6P	0	0	Pass
22_Bedroom_03_2B4P	0	0	Pass
22_Bedroom_03.2_2B4P	0	0	Pass
22_Bedroom_04.2_2B4P	0	0	Pass
22_Bedroom_01_3B6P	0	0	Pass
22_Bedroom_01.2_3B6P	0	0	Pass
22_Bedroom_04_2B4P	0	0	Pass
22_Bedroom_01.3_3B6P	0	0	Pass
23_Bedroom_04__Penthouse	0	0	Pass
23_Bedroom_02__Penthouse	0	0	Pass
23_Bedroom_01__Penthouse	0	0	Pass
23_Bedroom_03__Penthouse	0	0	Pass
19_LKD_06_2B3P	2.9	NA	Pass
19_LKD_02_2B3P	1.5	NA	Pass
19_LKD_12_1B1P	0	NA	Pass
19_LKD_01_2B4P	2.1	NA	Pass
19_LKD_03_2B3P	1.5	NA	Pass
19_LKD_04_2B3P	1.1	NA	Pass
19_LKD_05_2B3P	0.9	NA	Pass
19_LKD_07_2B3P	0	NA	Pass
19_LKD_08_2B4P	0	NA	Pass
19_LKD_09_1B1P	0	NA	Pass
19_LKD_10_1B1P	0	NA	Pass
19_LKD_11_1B1P	0	NA	Pass
13_LKD_06_2B3P	1.8	NA	Pass
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13_LKD_13_2B3P	0.1	NA	Pass
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13_LKD_09_1B1P	0	NA	Pass
13_LKD_10_1B1P	0	NA	Pass
13_LKD_11_1B1P	0	NA	Pass
19_LKD_13_2B3P	0	NA	Pass
22_LKD_03_2B4P	1.1	NA	Pass
22_LKD_04_2B4P	0.3	NA	Pass

22_LKD_01_3B6P	0	NA	Pass
22_LKD_02_3B6P	0.1	NA	Pass
23_LKD_Penthouse	0.4	NA	Pass

Occupancy and equipment gains are specified by the TM59 guidance. For clarity, the following assumptions have been used and the proposals for purge vent openings are also detailed below:

Assumptions	**Target performance**
Glazing G-value (all glazing areas excluding purge vents)	0.4 on South and East elevations 0.6 on North and West elevations
Façade layout	As per floor plan
Weather data	Manchester_DSY1_2020High50.epw
MVHR boost rates – 1, 2, 3 bed	70l/s boost rate
MVHR boost rates – Penthouse	70l/s boost rate
Peak lopping – Apartments on 22nd floor, penthouse	-12°C
Vent panel conditions	Bottom hung, outwards opening, 90% openable area
Blinds applied to fixed glazing elements	Shading coefficient: 0.28 Short- wave radiant fraction: 0.32
Bedroom ventilation opening hours profile	Open 13:00-23:00 North Elevation Open 20:00-23:00 East/South Elevation Open 18:00- 23:00 South/West/North Elevation
Living room ventilation opening profile	Open 13:00-23:00 North Elevation Open 20:00-23:00 East/South Elevation Open 18:00- 23:00 South/West/North Elevation

Appendix A – CIBSE TM59 Rooms Gains and Profiles

Extract from TM59: 2017 Section 6

Table 2 Occupancy and equipment gain descriptions

Unit/ room type	Occupancy	Equipment load
Studio	2 people at 70% gains from 11 pm to 8 am 2 people at 100% gains from 8 am to 11 pm	Peak load of 450 W from 6 pm to 8 pm*. 200 W from 8 pm to 10 pm 110 W from 9 am to 6 pm and 10 pm to 12 pm Base load of 85 W for the rest of the day
1-bedroom apartment: living room/kitchen	1 person from 9 am to 10 pm; room is unoccupied for the rest of the day	Peak load of 450 W from 6 pm to 8 pm 200 W from 8 pm to 10 pm 110 W from 9 am to 6 pm and from 10 pm to 12 pm Base load of 85 W for the rest of the day
1-bedroom apartment: living room	1 person at 75% gains from 9 am to 10 pm; room is unoccupied for the rest of the day	Peak load of 150 W from 6 pm to 10 pm 60 W from 9 am to 6 pm and from 10 pm to 12 pm Base load of 35 W for the rest of the day
1-bedroom apartment: kitchen	1 person at 25% gains from 9 am to 10 pm; room is unoccupied for the rest of the day	Peak load of 300 W from 6 pm to 8 pm Base load of 50 W for the rest of the day
2-bedroom apartment: living room/kitchen	2 people from 9 am to 10 pm; room is unoccupied for the rest of the day	Peak load of 450 W from 6 pm to 8 pm 200 W from 8 pm to 10 pm 110 W from 9 am to 6 pm and from 10 pm to 12 pm Base load of 85 W for the rest of the day
2-bedroom apartment: living room	2 people at 75% gains from 9 am to 10 pm; room is unoccupied for the rest of the day	Peak load of 150 W from 6 pm to 10 pm 60 W from 9 am to 6 pm and from 10 pm to 12 pm Base load of 35 W for the rest of the day
2-bedroom apartment: kitchen	2 people at 25% gains from 9 am to 10 pm; room is unoccupied for the rest of the day	Peak load of 300 W from 6 pm to 8 pm Base load of 50 W for the rest of the day
3-bedroom apartment: living room/kitchen	3 people from 9 am to 10 pm; room is unoccupied for the rest of the day	Peak load of 450 W from 6 pm to 8 pm 200W from 8 pm to 10 pm 110 W from 9 am to 6 pm and from 10 pm to 12 pm Base load of 85 W for the rest of the day
3-bedroom apartment: living room	3 people at 75% gains from 9 am to 10 pm; room is unoccupied for the rest of the day	Peak load of 150 W from 6 pm to 10 pm 60 W from 9 am to 6 pm and from 10 pm to 12 pm Base load of 35 W for the rest of the day
3-bedroom apartment: kitchen	3 people at 25% gains from 9 am to 10 pm; room is unoccupied for the rest of the day	Peak load of 300 W from 6 pm to 8 pm base load of 50 W for the rest of the day
Double bedroom	2 people at 70% gains from 11 pm to 8 am 2 people at full gains from 8 am to 9 am and from 10 pm to 11 pm 1 person at full gains in the bedroom from 9 am to 10 pm	Peak load of 80 W from 8 am to 11 pm Base load of 10 W during the sleeping hours
Single bedroom (too small to accommodate double bed)	1 person at 70% gains from 11 pm to 8 am 1 person at full gains from 8 am to 11 pm	Peak load of 80 W from 8 am to 11 pm Base load of 10 W during sleeping hours
Communal corridors	Assumed to be zero	Pipework heat loss only; see section 3.1 above

* All times in GMT

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Figure 1 Heat gain profile

Number of people	Description	Peak load (W) Sensible	Peak load (W) Latent	Period 00–01	01–02	02–03	03–04	04–05	05–06	06–07	07–08	08–09	09–10	10–11	11–12	12–13	13–14	14–15	15–16	16–17	17–18	18–19	19–20	20–21	21–22	22–23	23–24
				Hour-ending 1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00	24.00
1	Single bedroom occupancy	75	55	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7
2	Double bedroom occupancy	150	110	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.7
2	Studio occupancy	150	110	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1-bed: living/kitchen occupancy	75	55	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
1	1-bed: living occupancy	75	55	0	0	0	0	0	0	0	0	0	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0	0
1	1-bed: kitchen occupancy	75	55	0	0	0	0	0	0	0	0	0	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0	0
2	2-bed: living/kitchen occupancy	150	110	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
2	2-bed: living occupancy	150	110	0	0	0	0	0	0	0	0	0	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0	0
2	2-bed: kitchen occupancy	150	110	0	0	0	0	0	0	0	0	0	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0	0
3	3-bed: living/kitchen occupancy	225	165	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
3	3-bed: living occupancy	225	165	0	0	0	0	0	0	0	0	0	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0	0
3	3-bed: kitchen occupancy	225	165	0	0	0	0	0	0	0	0	0	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0	0
	Single bedroom equipment	80		0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.13
	Double bedroom equipment	80		0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.13
	Studio equipment	450		0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	1	1	0.44	0.44	0.24	0.24
	Living/kitchen equipment	450		0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	1	1	0.44	0.44	0.24	0.24
	Living equipment	150		0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	1	1	1	1	0.4	0.4
	Kitchen equipment	300		0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	1	1	0.17	0.17	0.17	0.17
	Lighting profile	2 (W/m2)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0

Extract from TM59: 2017 Section 5.2

For the purposes of the assessment, lighting energy is assumed to be proportional to floor area, and lighting loads are measured in W/m². From 6 pm to 11 pm, 2 W/m² should be assumed as the default for an efficient new-build home. This assumes that good daylight levels are available (also noting that only May to September is assessed within CIBSE TM52). For existing buildings, or specialist lighting designs, a calculated higher value should be used. For communal corridors, use 2 W/m²; this may be assumed as zero if passive infrared (pir) sensors are present.