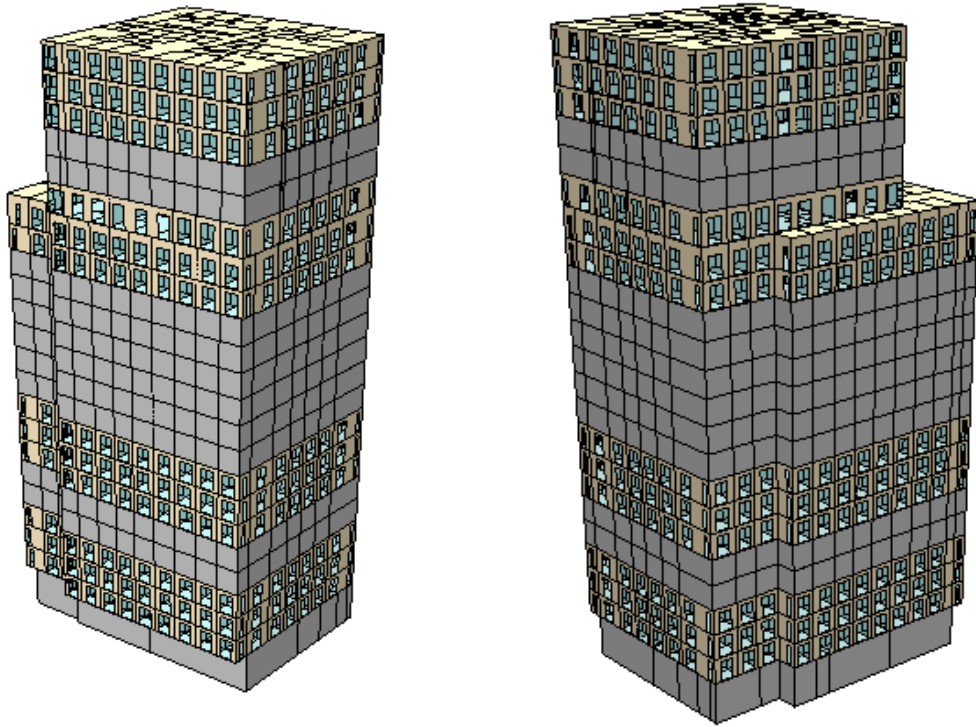




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33-41 Cheetham Hill Road, Manchester
Summertime Internal Environment Report
Including Ventilation Statement
CIBSE TM59 Overheating Analysis

QA

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Contents

Executive Summary.....	3
1.0 Introduction.....	4
2.0 Assessment Methodology and Criteria	7
3.0 Model Settings	9
4.0 Results.....	14
Appendix A – CIBSE TM59 Rooms Gains and Profiles	17

Executive Summary

This report has been produced to assess the overheating risk for full floor plates of the 33-41 Cheetham Hill Road development from bottom, middle and top floor levels.

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.

Futureserv understands that some facades of the development are exposed to high noise levels and air quality constraints which may limit the use of natural ventilation for reducing the risk of overheating within the affected dwellings.

The Cheetham Hill Road development passes the CIBSE TM59 overheating assessment.

To demonstrate consideration with acoustic measures, we are restricting window opening times as below:

- Bedroom ventilation opening hours profile:
 - Open 19:00-23:00 South Boundary- Cheetham Hill Rd- Carnarvon St
 - Open 16:00-23:00 South Boundary- Carnarvon St
 - Open 11:00- 23:00 Gibson Place
- Living room ventilation opening profile:
 - Open 19:00-23:00 South Boundary- Cheetham Hill Rd- Carnarvon St
 - Open 16:00-23:00 South Boundary- Carnarvon St
 - Open 11:00- 23:00 Gibson Place

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 and 17th Floor 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.

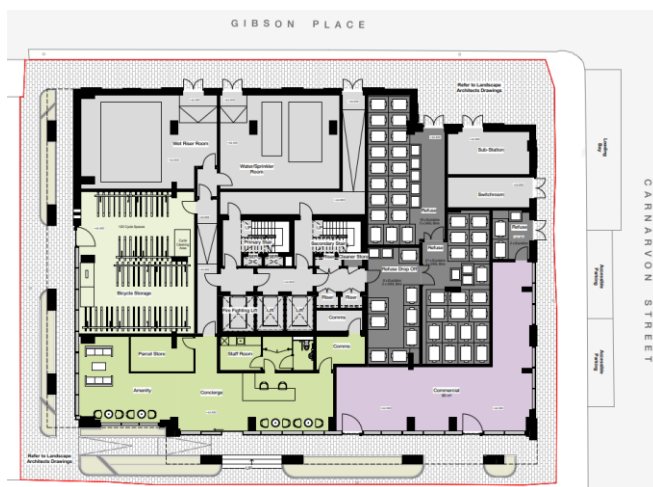
Important Notes

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.

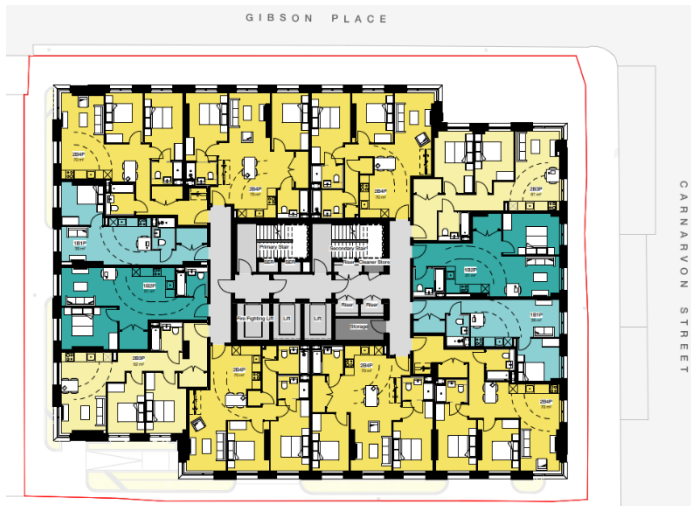
1.0 Introduction

A thermal model exercise has been undertaken to predict the internal temperatures over a typical year for the proposed residential development known as 31-44 Cheetham Hill Road, Manchester. The development is a multi-storey block of residential accommodation, consisting of 237 no 1 and 2 bed apartments. There is amenity accommodation situated on the 17th floor. 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.



31-44 Cheetham Hill Road Ground Floor Plan



31-44 Cheetham Hill Road Floor Plan 01-16



31-44 Cheetham Hill Road Floor Plan 17



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 ($^{\circ}\text{K}$) 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	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 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 Hawkins Brown: -

-  CHR-HBA-SW-00-DR-A-00-0010.dwg
-  CHR-HBA-ZZ-00-DR-A-00-0100.dwg
-  CHR-HBA-ZZ-XX-DR-A-00-0201.dwg
-  CHR-HBA-ZZ-XX-DR-A-00-0202.dwg
-  CHR-HBA-ZZ-XX-DR-A-00-0203.dwg
-  CHR-HBA-ZZ-XX-DR-A-00-0204.dwg
-  CHR-HBA-ZZ-ZZ-DR-A-00-0101.dwg
-  CHR-HBA-ZZ-ZZ-DR-A-00-0117.dwg
-  CHR-HBA-ZZ-ZZ-DR-A-00-0118.dwg

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.

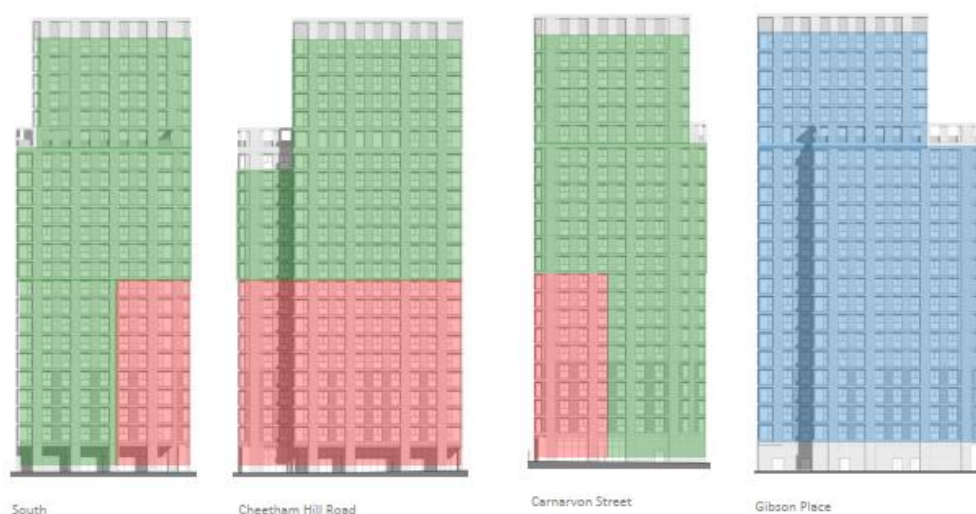
Measurements for vent openings and free areas, have been taken from the plans and elevations and are based on the openable area of the panels, as opened to an angle of 90 degrees (side hung, inwards opening windows). Any reduction in the window free areas may affect compliance with the overheating criteria.

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 22°C. The Windows will be fully open when the internal temperature exceeds 22°C. The opening profile has been set to operate for Bedrooms and LKDs during the daytime hours of

- Open 19:00-23:00 Red Zone
- Open 16:00-23:00 Green Zone
- Open 11:00- 23:00 Blue Zone



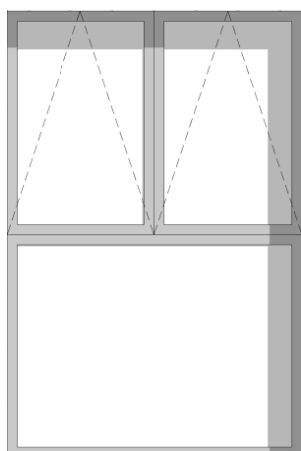
Vent opening restriction diagrams as provided by Jameson Acoustics

3.4.3 Openable windows

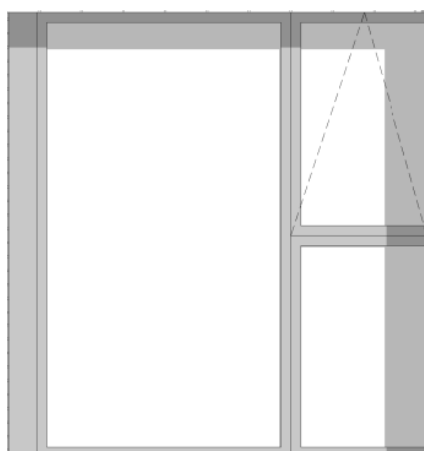
The openable windows are top hung, outward opening windows. The free area openings stated are as required for compliance with TM59 overheating only. An assessment of the required free area for purge ventilation in line with Guide F of the building regulations, should be made in order to satisfy building control. Altering the free areas of the perforations will have an effect on the overheating results and therefore will need to be taken into consideration.

3.4.4 Window Free areas tabulated for various window types

PURGE PANEL REF	Opena ble HEIGH T (M)	Opena ble WIDT H (M)	Opena ble Area (m2)	OPENI NG ANGLE (degre es)	NOTES
Double Window Opening	1.2	0.8	1.92	15	Top hung outward opening
Single Window Opening	1.2	0.8	0.96	15	Top hung outward opening



Double window opening



Single window opening

3.5 Auxiliary ventilation

The apartment areas are ventilated with MVHRU's. 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 – 60l/s boost rate
- 2 Bed apartments – 89l/s boost rate

3.6 Purge ventilation

Additional purge fans have been applied to the corner living/kitchen units on the Cheetham Hill Road/ South Boundary elevation to supply extra air at a rate of 95l/s.

Both Auxiliary and Purge Ventilation Boost profiles operate 24/7 if the internal temperature exceeds 22 degrees C.

3.7 Internal Gains TM59

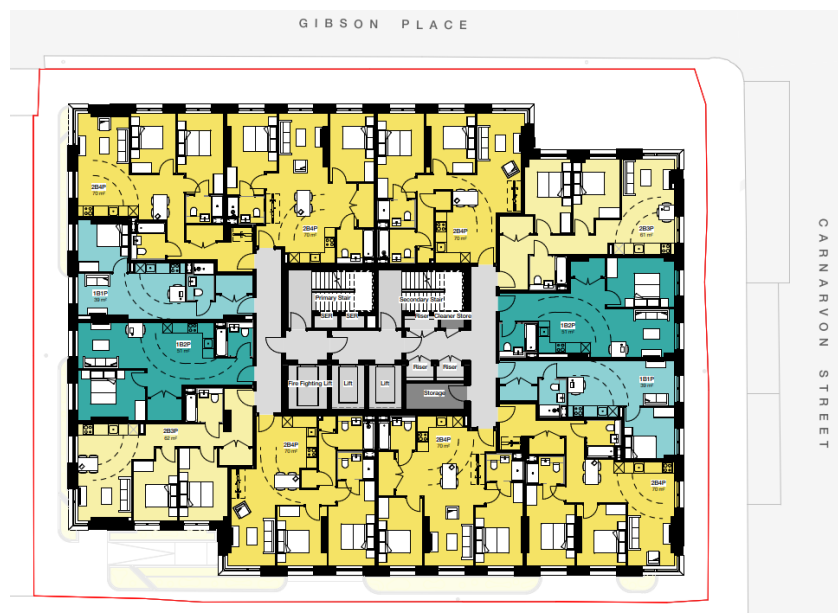
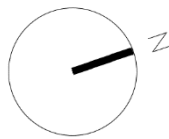
The internal gains and profiles that have been used for the internal temperature analysis model have been taken from CIBSE TM59 and are listed in appendix B.

3.8 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 primarily at ground floor and at the seventeenth floor level.

These areas have a mix of amenity, concierge and retail functions and as 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 ground floor bike stores or on the upper level roof as appropriate to the spaces they are serving.

4.0 Results

4.1 Summary of TM59 Overheating assessment Results (with blinds)

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

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

The results from the final overheating simulation showed that all of the assessed bedrooms and Kitchen/Living/Dining Areas comply with the TM59 overheating criteria.

None of the assessed living/Kitchen/bedroom areas failed criterion 1, whereby the ΔT (Tmax-Toperative) is $\geq 1K$ for more than 3% of Occupied Summer Hours. None of the assessed bedrooms failed criterion 2, whereby the Toperative exceeds 26°C for more than 1% of the sleeping hours (11pm till 7am).

Table 4.1 TM59 Assessment Results Table

Room Name	Criteria 1	Criteria 2	Compliance
02_Bedroom_1.1	1.8	9	Pass
02_Bedroom_1.2	1.4	11	Pass
02_Bedroom_2.1	1.3	6	Pass
02_Bedroom_2.2	1.4	8	Pass
02_Bedroom_3.2	1.5	10	Pass
02_Bedroom_3.1	1.3	7	Pass
02_Bedroom_5	0	0	Pass
02_Bedroom_4.1	0.5	3	Pass
02_Bedroom_4.2	1.2	1	Pass
02_Bedroom_6	0.3	0	Pass
02_Bedroom_7.2	2.9	3	Pass
02_Bedroom_7.1	2.3	4	Pass
02_Bedroom_8.1	2.2	5	Pass
02_Bedroom_8.2	1.3	5	Pass
02_Bedroom_9.2	1.5	5	Pass
02_Bedroom_9.1	2.2	5	Pass
02_Bedroom_12	1.7	0	Pass
02_Bedroom_11	2.4	3	Pass
02_Bedroom_10.2	1.1	1	Pass
02_Bedroom_10.1	1.3	0	Pass
07_Bedroom_1.1	1.6	4	Pass
07_Bedroom_1.2	1.3	8	Pass
07_Bedroom_2.1	1.1	5	Pass

07_Bedroom_2.2	1.3	4	Pass
07_Bedroom_3.2	1.4	8	Pass
07_Bedroom_3.1	1.2	5	Pass
07_Bedroom_5	0	0	Pass
07_Bedroom_4.1	0.4	1	Pass
07_Bedroom_4.2	1	0	Pass
07_Bedroom_6	0.3	0	Pass
07_Bedroom_7.2	3	1	Pass
07_Bedroom_7.1	2.3	3	Pass
07_Bedroom_8.1	2.2	2	Pass
07_Bedroom_8.2	1.3	2	Pass
07_Bedroom_9.2	1.5	2	Pass
07_Bedroom_9.1	2.1	2	Pass
07_Bedroom_12	1.6	0	Pass
07_Bedroom_11	2.3	1	Pass
07_Bedroom_10.2	1.1	0	Pass
07_Bedroom_10.1	1.2	0	Pass
16_Bedroom_1.1	1.3	3	Pass
16_Bedroom_1.2	1.1	5	Pass
16_Bedroom_2.1	1.1	14	Pass
16_Bedroom_2.2	1.3	12	Pass
16_Bedroom_3.2	1.2	12	Pass
16_Bedroom_3.1	1.1	13	Pass
16_Bedroom_5	0	0	Pass
16_Bedroom_4.1	0.5	1	Pass
16_Bedroom_4.2	1	0	Pass
16_Bedroom_6	0	0	Pass
16_Bedroom_7.2	1.7	0	Pass
16_Bedroom_7.1	1.3	0	Pass
16_Bedroom_8.1	2	5	Pass
16_Bedroom_8.2	1.1	5	Pass
16_Bedroom_9.2	1.7	8	Pass
16_Bedroom_9.1	2.1	7	Pass
16_Bedroom_12	1.3	0	Pass
16_Bedroom_11	1	0	Pass
16_Bedroom_10.2	0.5	0	Pass
16_Bedroom_10.1	0.5	0	Pass
21_Bedroom_1	1.1	2	Pass
21_Bedroom_2.2	1.3	1	Pass
21_Bedroom_3.1	1.1	1	Pass
21_Bedroom_3.2	1.1	0	Pass
21_Bedroom_4.1	0	0	Pass
21_Bedroom_5.1	0	0	Pass

21_Bedroom_7.1	1.3	0	Pass
21_Bedroom_7.2	0.8	0	Pass
21_Bedroom_6.1	1.5	0	Pass
21_Bedroom_6.2	2	0	Pass
21_Bedroom_8.1	1.4	0	Pass
21_Bedroom_8.2	1.1	0	Pass
21_Bedroom_2.1	1.1	0	Pass
02_LKD_2	1	0	Pass
02_LKD_9	0.2	0	Pass
02_LKD_3	2.1	0	Pass
02_LKD_5	0	0	Pass
02_LKD_7	1.7	0	Pass
02_LKD_8	0.2	0	Pass
02_LKD_11	0.5	0	Pass
02_LKD_12	0.8	0	Pass
02_LKD_4	1.1	0	Pass
02_LKD_6	0	0	Pass
07_LKD_2	1	0	Pass
07_LKD_1	2.9	0	Pass
07_LKD_9	0.1	0	Pass
07_LKD_3	2	0	Pass
07_LKD_5	0	0	Pass
07_LKD_7	1.7	0	Pass
07_LKD_8	0.2	0	Pass
07_LKD_11	0.4	0	Pass
07_LKD_12	0.8	0	Pass
07_LKD_4	0.8	0	Pass
07_LKD_6	0	0	Pass
16_LKD_2	1.4	0	Pass
16_LKD_1	2	0	Pass
16_LKD_9	0.6	0	Pass
16_LKD_3	2.3	0	Pass
16_LKD_5	0	0	Pass
16_LKD_7	0	0	Pass
16_LKD_8	0.5	0	Pass
16_LKD_11	0.2	0	Pass
16_LKD_12	0.6	0	Pass
16_LKD_4	0.7	0	Pass
16_LKD_6	0	0	Pass
21_LKD_1	2.7	0	Pass
21_LKD_3	0.8	0	Pass
21_LKD_4	0	0	Pass
21_LKD_5	0	0	Pass

21_LKD_7	0	0	Pass
21_LKD_6	0.4	0	Pass
21_LKD_2	1.6	0	Pass
16_LKD_10	1.5	0	Pass
21_LKD_8	1.3	0	

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 bed	60l/s boost rate
MVHR boost rates – 2 beds	89l/s boost rate
Purge Ventilation – Corner Living/Kitchen units on Cheetham Hill Rd/ South Boundary	95l/s
Vent panel conditions	Top 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 19:00-23:00 South Boundary- Cheetham Hill Rd- Carnarvon St Open 16:00-23:00 South Boundary- Carnarvon St Open 11:00- 23:00 Gibson Place
Living room ventilation opening profile	Open 19:00-23:00 South Boundary- Cheetham Hill Rd- Carnarvon St Open 16:00-23:00 South Boundary- Carnarvon St Open 11:00- 23:00 Gibson Place

Appendix A – CIBSE TM59 Rooms Gains and Profiles

Extract from TM59: 2017 Section 6

Supplementary information on profile development

7

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 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
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

Figure 1 Heat gain profile

Number of people	Description	Peak load (W)		Period																							
		Sensible	Latent	Hour-ending																							
				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
1	Single bedroom occupancy	75	55	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	1	1	0.7
2	Double bedroom occupancy	150	110	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	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	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
1	1-bed: living occupancy	75	55	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	0.75	0.75	0	0
1	1-bed: kitchen occupancy	75	55	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	0.25	0.25	0	0
2	2-bed: living/kitchen occupancy	150	110	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
2	2-bed: living occupancy	150	110	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	0.75	0.75	0	0
2	2-bed: kitchen occupancy	150	110	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	0.25	0.25	0	0
3	3-bed: living/kitchen occupancy	225	165	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
3	3-bed: living occupancy	225	165	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	0.75	0.75	0	0
3	3-bed: kitchen occupancy	225	165	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	0.25	0.25	0	0
				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	1	1	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	1	1	0.13
				0.19	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	1	1	0.44	0.44	0.24	0.24
				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
				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	0.4	1	1	1	1	0.4	0.4
				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	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	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.