Lord Street, Wrexham.

CIBSE TM59 Overheating Analysis

In accordance with Part O



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OVERHEATING REPORT OF LORD STREET, WREXHAM

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Revision Record			
Rev	**Date**	**By**	**Summary of Changes**
01	22.09.25	AG	

1 EXECUTIVE SUMMARY

This report presents an analytical study of the overheating outcomes for the proposed apartments at the site of Lord Street, Wrexham assessing the development for risks of overheating. The modelling exercise uses design information and relevant industry standards. The results are based on the dynamic modelling outputs from the IES VE software. The dwelling types being assessed are:

- 23No. 1 and 2 Bedroom Apartments

Due to acoustical restrictions, the proposed design prohibits the opening of external windows during the night, limiting the scope to gaining compliance with Part O through natural ventilation means. It is therefore proposed that mechanical ventilation via MVHR (Mechanical Ventilation Heat Recovery) has been assumed to be installed within each of the assessed apartments,

It may be necessary for the units to operate in boost mode during the warmest periods of the year, which increases the ventilation rates into the dwellings beyond the Approved Document F minimum rates. The required boost rates are detailed within this report.

A glazing solar performance factor (g Value) of 40% to prevent excessive solar gains has been applied. Part O stipulates, the use of blinds and/or curtains to limit solar gains is strictly forbidden in forming the overheating mitigation strategy and have not been modelled.

This assessment found that all assessed spaces are able to overcome summertime temperatures through the described strategies.

Although the regulations do not permit the use of blinds and curtains in the calculations, if the sun shines directly into a living space, the occupant should consider closing the curtains or blinds to limit solar gains and try and keep rooms as cool as possible. Mitigating overheating will rely on the end user operation and understanding of overheating. Heat comes into the house in two ways: solar radiation from the sun, and hot air. We need to limit both to prevent overheating, which may require closing both the windows and curtains on the warmest days.

Assessment findings

The assessment found all assessed dwellings are able to meet the TM59 overheating criteria and therefore achieve Part O compliance with the building design described in this report. A summary of measures that form the overheating mitigating strategy include:

- Windows can be opened on 100mm restrictors during the day only.
- Glazing solar performance (g value) of 0.40.
- Internal doors to be left open when possible.
- Mechanical ventilation in the form of MVHR is to be provided – boost rates required to achieve compliance.

The summary results table below details the overheating assessment findings of the assessed apartments:

#	Apartment Type	Dwelling Description	Overheating Strategy	TM59/Part O Compliance	Notes	Results
1	All Apartments	1&2 Bedroom Apartments	Windows 100mm restrictors (day only) MVHR with boost mode + g value of 0.40	☑	Overheating strategy sufficient	Appendix A

2 INTRODUCTION

This report reviews the overheating risk assessment carried out for the proposed residential building, using dynamic simulation modelling following the guidance detailed in CIBSE TM59 Design methodology for the assessment of overheating risk in homes (2017).

An analytical study is presented within this report of the potential overheating risks of the residential spaces. The scope of this study is to report upon the likely overheating risk and to assess the periods of the year that the building has the potential to overheat using current CIBSE weather file data, and to present a working solution to any and all spaces within the assessed apartments.

The intention is that this study helps inform and verify the design proposals, thereby providing the basis for mitigating overheating risk and producing a building that provides comfortable environmental conditions for occupants.

It is important to note that with any modelling exercise there are assumptions and approximations that have to be made. As far as possible, details of all assumptions and approximations are supplied within the report. These were predominantly informed by information provided by the design team and should be reviewed carefully.

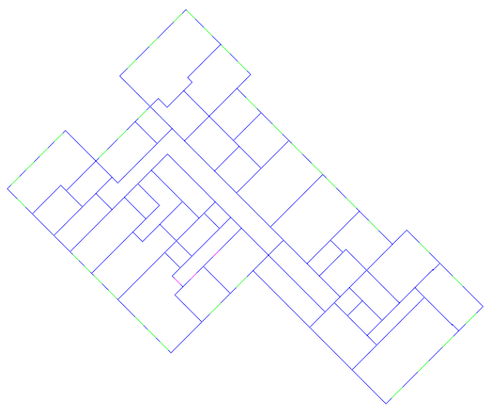


Figure 1: Typical Floor Plan

All results are based on the output from computer modelling software and should be taken as an indication of the likely final situation, but these conditions cannot be guaranteed.

Moreover, this Overheating Assessment supports the Planning Application and demonstrate that the proposed development complies with the relevant current guidance CIBSE TM59: Design Methodology for the Assessment of Overheating Risk in Homes (2017) and the requirements of the Dynamic Simulation of the building regulation in England setting standards for overheating in new residential buildings: Overheating: Approved Part O.

3 Overheating Assessment Criteria

TM59 sets different overheating compliance criteria for homes that are predominantly naturally ventilated and for homes that are predominantly mechanically ventilated.

For homes that are predominantly naturally ventilated, the method with two criteria should be used to assess overheating. The first overheating criteria, which applies to both living rooms/kitchens and bedrooms, is an adaptive criteria. The second overheating criterion is a fixed temperature criteria which applies only to bedrooms. Both criteria must be met for all spaces within a home to demonstrate compliance.

For mechanically ventilated homes, the fixed temperature method with a single criterion should be used to assess overheating. This single criterion must be met for all spaces (living rooms/kitchens and bedrooms) within a mechanically ventilated home to demonstrate compliance.

The TM59 criteria for naturally and mechanically ventilated homes are summarised in the following table. The dwellings in this assessment are assessed against 'predominantly mechanically ventilated' criteria.

All criteria must be met for all spaces within a home to demonstrate full compliance.

Table 3: Overheating Assessment Categorisation

Assessment Type	Assessment Criteria	Applicable Rooms	Occupied Hours	Naturally Ventilated Homes (open windows)	Mechanically Ventilated Homes (closed windows)
Predominantly Natural Ventilation	Criterion 1	Living rooms, kitchens and bedrooms	Living / Kitchen / Dining rooms – 9am to 10pm (13 hours/day) Bedrooms – 24-hour occupancy	The number of hours during which external and internal temperature difference 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.	Not Applicable
	Criterion 2	Bedrooms only	Bedrooms – 24-hour occupancy	The operative temperature in the bedroom from 10 pm to 7 am shall not exceed 26 °C for more than 1% of annual hours. 33 or more hours above 26˚C will be a fail	Not Applicable
Predominantly Mechanical Ventilation	Criterion 3	Living rooms, kitchens and bedrooms	Living / Kitchen / Dining rooms – 9am to 10pm (13 hours/day) Bedrooms – 24-hour occupancy	Not applicable	The operative temperature in occupied all occupied rooms should not exceed 26˚C for more than 3% of the annual occupied annual hours. 143 or more hours above 26˚C for living rooms and kitchens will be a fail. 263 or more hours above 26 ˚C for bedrooms will be a fail

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 based on the U Values provided by *the design team and Part L1A notional building figures*:-

Element	Proposed U-value (W/m^2K)
External Walls	0.28
Floor	0.25
Roof	0.18
Glazing	1.80
Doors	2.00

Building envelope U-values

4.3 Glazing Specification

The glazing is based on a G-value of 0.40. It is assumed this is the same for replacement glass and new windows.

4.4 Internal window blinds

Internal blinds have been not included in the calculations.

4.5 Weather

Weather file used in the calculation:- **Manchester_DSY1_2020High50_.epw.** The peak summer temperature is 30°C as shown in figure 2.

4.6 Site & Orientation

The proposed building has been modelled in the orientation as depicted in figure 3.

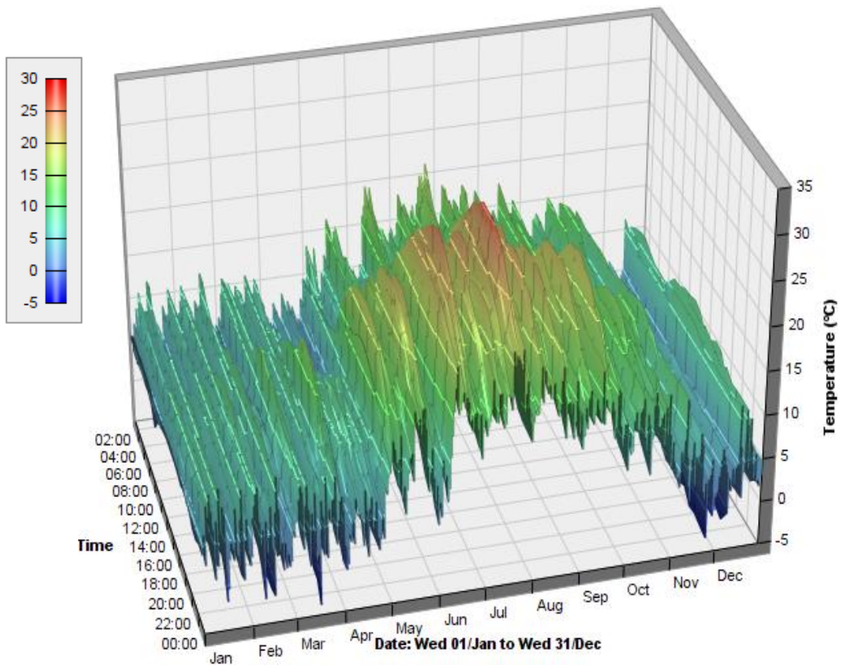


Figure 2: Annual dry-bulb temperature graph of modelled weather

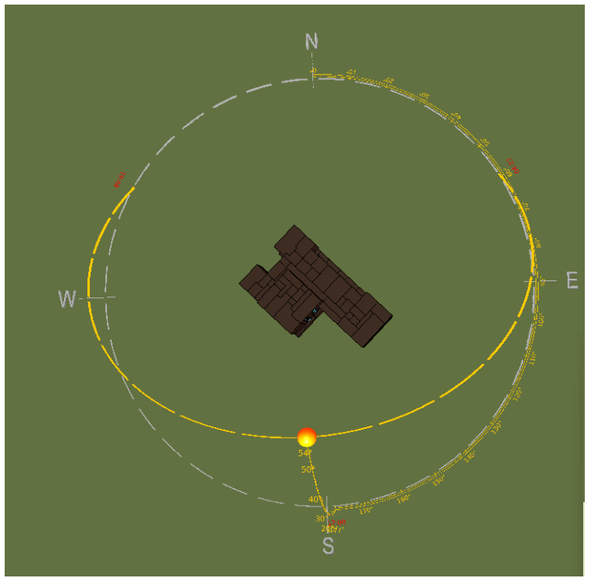
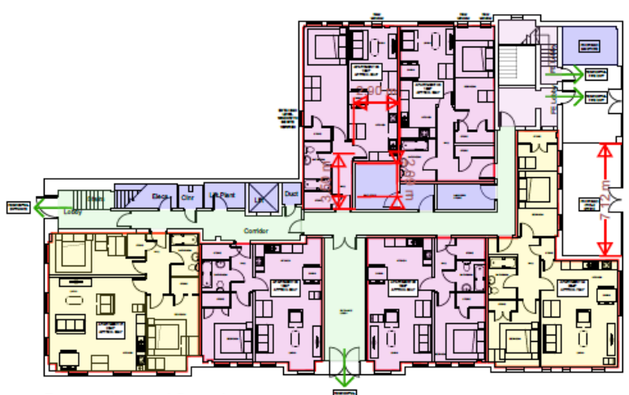


Figure 3: Site orientation of the proposed dwellings

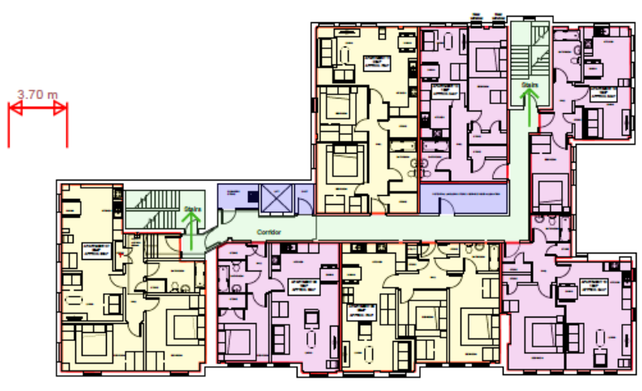
5 REFERENCE DATA

Architectural Drawings (MHA Architecs)

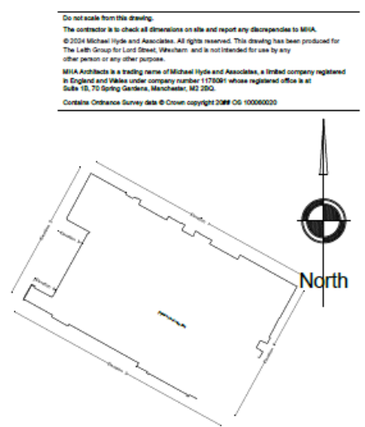
Floor Plans & Elevations

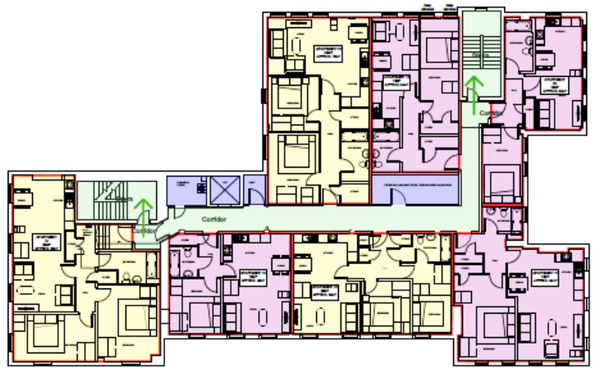


Proposed ground floor plan

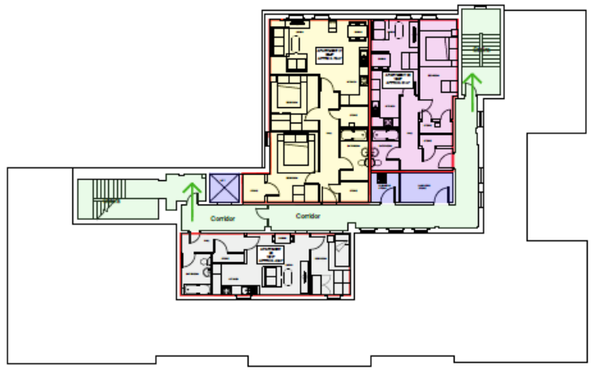


Proposed first plan





Proposed second floor plan



Proposed third floor plan

ACCOMMODATION SCHEDULE		Compliance with The Welsh Housing Quality Standard for:		
Apartment number:	Gross Internal Area (GIA):	Minimum floor area for bedrooms	Min. bedroom widths & ceiling heights	Nominal Occupancy living space area
Apartment 01: 2B4P	82m²	Yes	Yes	Yes
Apartment 02: 1B2P	58m²	Yes	Yes	Yes
Apartment 03: 1B2P	60m²	Yes	Yes	Yes
Apartment 04: 2B4P	79m²	Yes	Yes	Yes
Apartment 05: 1B2P	60m²	Yes	Yes	Yes
Apartment 06: 1B2P	59m²	Yes	Yes	Yes
Apartment 07: 2B4P	88m²	Yes	Yes	Yes
Apartment 08: 1B2P	60m²	Yes	Yes	Yes
Apartment 09: 2B4P	78m²	Yes	Yes	Yes
Apartment 10: 1B2P	64m²	Yes	Yes	Yes
Apartment 11: 2B4P	76m²	Yes	Yes	Yes
Apartment 12: 1B2P	54m²	Yes	Yes	Yes
Apartment 13: 1B2P	50m²	Yes	Yes	Yes
Apartment 14: 2B4P	90m²	Yes	Yes	Yes
Apartment 15: 1B2P	49m²	Yes	Yes	Yes
Apartment 16: 2B4P	64m²	Yes	Yes	Yes
Apartment 17: 1B2P	64m²	Yes	Yes	Yes
Apartment 18: 2B4P	76m²	Yes	Yes	Yes
Apartment 19: 1B2P	54m²	Yes	Yes	Yes
Apartment 20: 1B2P	53m²	Yes	Yes	Yes
Apartment 21: 2B4P	75m²	Yes	Yes	Yes
Apartment 22: 1B2P	51m²	Yes	Yes	Yes
Apartment 23: 1B1P	42m²	Yes	Yes	Yes
Ancillary spaces				
Circulation spaces				

09 NO. 2Bed 4Persons

13 NO. 1Bed 2Persons

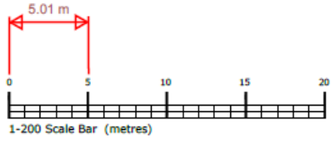
01 NO. 1Bed 1Person

The minimum applicable floor areas for bedrooms are as follows:
- 6.5m² for a single bedroom
- 10.2m² for a double/ twin bedroom

The narrowest point of any bedroom should be no less than 2.1m in width

The ceiling height of any habitable room should be at least 2.3m and, in any habitable room with a sloping ceiling, at least one-half of the floor area should have a ceiling height of at least 2.3m.

The minimum applicable Nominal occupancy Living space floor areas are as follows:
- 16m² for a single bedroom 1 person
- 18m² for a single bedroom 2 person
- 18m² for two double bedroom 4 person



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REV	DATE	DESCRIPTION	DRN	CHK
P1	2024-07-03	Initial issue	##	##

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PROJECT TITLE
Lord Street, Wrexham
16 Lord Street, Wrexham

TITLE
Existing plans

SUITABILITY
Work In Progress

DRAWN / CHECKED	INITIAL ISSUE DATE	SCALE
YQ / JL	07/2024	1:200 @ A2

DRAWING ID

Project	Originator	Volume	Level	Type	Role	Number	Status	Revision
1JD02	MHA	XX	XX	DR	A	02-000	S0	P1

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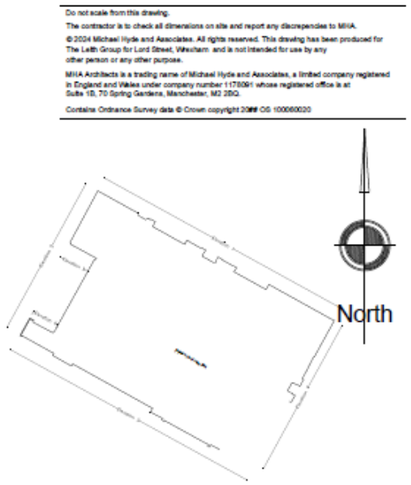
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Proposed elevation 1



Proposed elevation 2





Proposed elevation 3



Proposed elevation 4

Proposed elevation 5

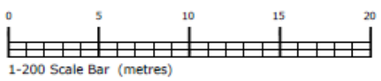
Proposed elevation 6

Ecologist to advise on appropriate positions for the bat access panels & bird boxes.

Generally, bat access panels should be sited at least four metres above ground level, ideally facing or close to areas of landscape planting or existing linear features. The access panels should not be positioned over windows or doorways where bat droppings may become a nuisance.

The installation of bird boxes is recommended at the development. Bird boxes will not be positioned over windows or doorways where droppings may become a nuisance. RSPB advice states that boxes should ideally be sited facing north to east, to avoid exposure to direct sunlight, which may cause overheating of chicks in the nest.

New potential extract / intake louvre position either in external wall or modified window - M&E consultant to confirm



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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).

See Appendix I for a detailed CIBSE TM59 internal gain schedule.

6.1 OCCUPANCY

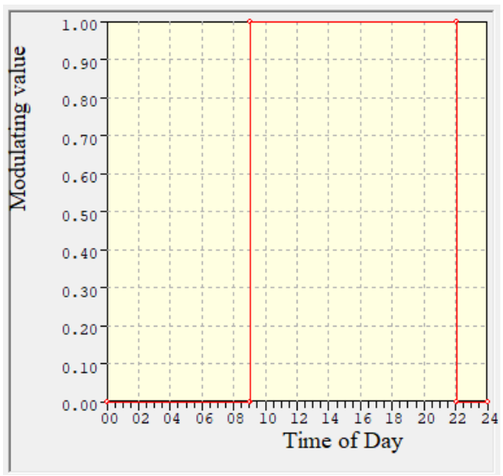
Based on CIBSE Guide A (2015a), a maximum sensible heat gain of 75W/person is assumed in the living spaces. An allowance for 30% reduced gain during sleeping is based on Addendum g to ANSI/ASHRAE Standard 55-2010.

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

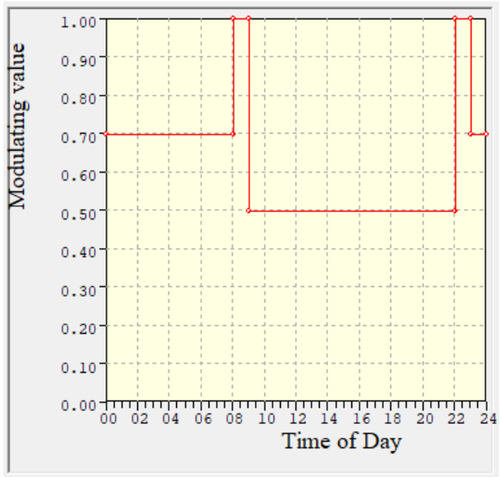
Occupant Gains

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
3 bed living/kitchen	3 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
Single bedroom	1 person at 70% gain from 11pm to 8am 1 person at full gain from 8am to 11pm

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/m² is applied to all occupied areas from 6pm to 11 pm.

Zone Type	Gain (W/m²)
living/kitchen/dining areas, bedrooms	2
	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
3 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
Single 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

7.1 Natural ventilation

Due to acoustical limitations, the windows have been assumed to be open to 100mm during the daytime only. All windows have been modelled as closed during the night.

7.2 MECHANICAL VENTILATION – MVHR

Mechanical ventilation in the form of MVHR is proposed for the dwellings, known as system 4 mechanical ventilation system.

This is a low energy, continuous mechanical extract ventilation system designed to replace conventional bathroom fans (such as intermittent systems) and draw moisture laden air out of the kitchen and wet rooms (bathrooms and utility) while supplying air to habitable spaces (bedrooms and kitchen/dining/living areas), providing a quiet and efficient ventilation system.

An additional benefit is an air pathway is also formed drawing warm air out of habitable spaces and evacuated from the dwelling, with the makeup air being provided by mechanically supplied air from the unit in addition to any windows in habitable spaces (when opened).

The MVHR unit been modelled to initially operate in trickle mode with the minimum ventilation rates as per Table 1.3 from AD F below. This equates to 13l/s to kitchen/Dining/Living areas and 6/s to each bedroom.

For more information, please refer to Approved Document F, Volume 1: Dwellings.

However, during the peak warmest periods of the year when external air temperatures are at their highest, boosted flow rates of 15 l/s for living kitchen areas and 20 l/s for bedrooms.

Boost mode has been modelled to operate when internal temperatures exceed 22°C.

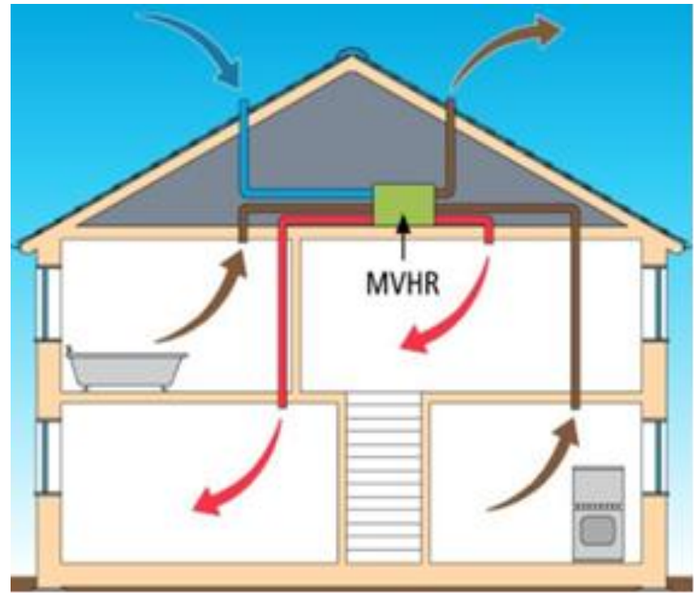


Figure 9: MVHR Depiction

Table 1.3 Minimum whole dwelling ventilation rates by no. of bedrooms

Number of bedrooms[1][2]	Minimum ventilation rate by no. of bedrooms (l/s)
1	19
2	25
3	31
4	37
5	43

NOTES:
1. If the dwelling only has one habitable room, a minimum ventilation rate of 13l/s should be used.
2. For each additional bedroom add 6l/s to the values in Table 1.3

▲ *Total Combined rate of continuous ventilation in the dwelling needs to meet the above minimum rates.*

8 ENSURING THE OVERHEATING STRATEGY IS USABLE

Approved Document O lists a number of measures to ensure the overheating mitigation strategy can be feasibly implemented in reality, as well as complying with overlapping building codes. The full literature can be found in *Section 3: Ensuring the overheating mitigation strategy is usable* of Approved Document O. A summary of these standards has been compiled below:

8.1 NOISE

- **3.2)** In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).

- **3.3)** Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits: A) 40dB LAeq,T, averaged over 8 hours (between 11pm and 7am). & b) 55dB LAFmax, more than 10 times a night (between 11pm and 7am).

8.2 POLLUTION

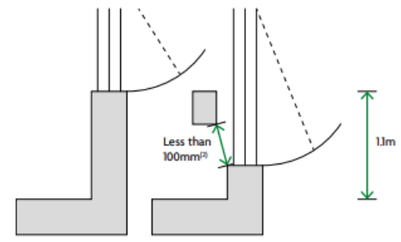
- **3.5)** Buildings located near to significant local pollution sources should be designed to minimise the intake of external air pollutants. Guidance is given in Section 2 of Approved Document F, Volume 1: Dwellings.

8.3 SECURITY

- **3.6)** When determining the free area available for ventilation during sleeping hours, only the proportion of openings that can be opened securely should be considered to provide useful ventilation. This particularly applies in the following locations, where openings may be vulnerable to intrusion by a casual or opportunistic burglar.
  a) Ground floor bedrooms
  b) Easily accessible bedrooms

Table 3.1 Guarding heights

Change in floor level between inside and outside	Guarding height[1]
Less than 600mm	See Approved Document K
More than 600mm	1.1m



NOTES:
1. This approved document has increased levels of protection from falling compared to Approved Document K. Where applicable, the higher standard applies.
2. Guarding should be sized to prevent the passage of a 100mm sphere.

Figure 10: Guarding heights (from Approved Document K)

8.4 PROTECTION FROM FALLING

- **3.8)** Openings which are intended to be open for long periods to reduce overheating risk might pose a higher risk of falls from height. Only the proportion of openings which can be opened with a very low risk of occupants falling from height should be considered to form part of the overheating mitigation strategy.
- **3.9)** Openings that can be opened wider than 100mm may form part of the overheating mitigation strategy where they meet all of the following conditions:
  a) Window handles on windows that open outwards are not more than 650mm from the inside face of the wall when the window is at its maximum openable angle.
  b) Guarding meets the minimum standards in Table 3.1
  c) Guarding does not allow children to easily climb it. For example, horizontal bars should generally be avoided.
  For more information, please refer to *Approved Document K.*

9 RESULTS SUMMARY

The assessment found all assessed dwellings are able to meet the TM59 overheating criteria and therefore achieve Part O compliance with the building design described in this report. A summary of measures that form the overheating mitigating strategy include:

- Windows can be opened on 100mm restrictors during the day only.
- Glazing solar performance (g value) of 0.40.
- Internal doors to be left open when possible.
- Mechanical ventilation in the form of MVHR is to be provided – boost rates required to achieve compliance.

The summary results table below details the overheating assessment findings of the assessed apartments:

#	Apartment Type	Dwelling Description	Overheating Strategy	TM59/Part O Compliance	Notes	Results
1	All Apartments	1&2 Bedroom Apartments	Windows 100mm restrictors (day only) MVHR with boost mode + g value of 0.40	☑	Overheating strategy sufficient	Appendix A

10 Assessment Summary

The assessment has shown that the assessed residential apartments present a low chance of overheating – with the detailed dynamic thermal modelling has shown where the risk is likely to occur.

With window openings prohibited during the night, reducing the overheating risk through natural and passive measures alone becomes difficult.

Therefore, it is recommended that all dwellings use MVHR with summer bypass. The report demonstrates that with the flow rates specified the units are capable of minimising the overheating risk to all assessed apartments. A summary of the overheating mitigating strategy includes:

- Keeping external windows and doors closed to prevent warm air entering the dwellings and overworking the MVHR units.
- Glazing g value of 0.40
- MVHR sized to achieve boost rates of 15/s in living/kitchen/dining spaces and 20l/s in bedrooms spaces – boost rates activate when internal temperatures exceed 22°C.

With the above measures implemented, the modelling found all habitable spaces in all of the assessed dwellings to pass the overheating criteria and comply with Part O building regulations.

Though the regulations do not permit the use of blinds and curtains in the calculations, if the sun shines directly into a living space, the occupant should consider closing the curtains or blinds to limit solar gains and try and keep rooms as cool as possible.

If it's cooler inside than outside, it is advised that occupants should keep their windows closed, to prevent bringing warm air in. If it reaches a point where the temperature inside the flat is equal to that outside, then you should open the windows, keeping the curtains closed.

11 Modelling Disclaimer

The calculations produced by Complete Sustainability have been carried out with the information provided by others to determine whether the thermal model of the proposed building can achieve compliance, at design stage, with the stated criteria within this report.

It should be noted that the data generated by this work is obtained using computer simulations. These simulations are the best means of predicting the performance of the building at this stage. Full certainty can only be achieved by measuring the performance of the building and associated systems after a period of use.

The actual operative temperatures within the building once occupied may vary from the calculated values within this report. These differences will occur due to a number of variable parameters between the modelled building and the actual building. Such differences will include the hours, levels of occupancy, equipment, how the windows are used etc.

Whilst the simulations have been undertaken in good faith using reasonable skill and care, Complete Sustainability can take no responsibility for differences between the computer simulations and the actual performance of the completed development due to the inherent complexity and variability of the physics in a building and its environment.

12 APPENDIX C - DETAILED OCCUPANCY SCHEDULES – CIBSE TM 59 HEAT GAIN PROFILE

Number of People	Description /Occupancy	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	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	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	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
1	1-bedroom /living/Kitchen	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 - bedroom /living	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 - bedroom Kitchen	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-bedroom /living/Kitchen	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 - bedroom /living	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 - bedroom Kitchen	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 - bedroom/living/Kitchen	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 - bedroom /living	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 - bedroom Kitchen	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