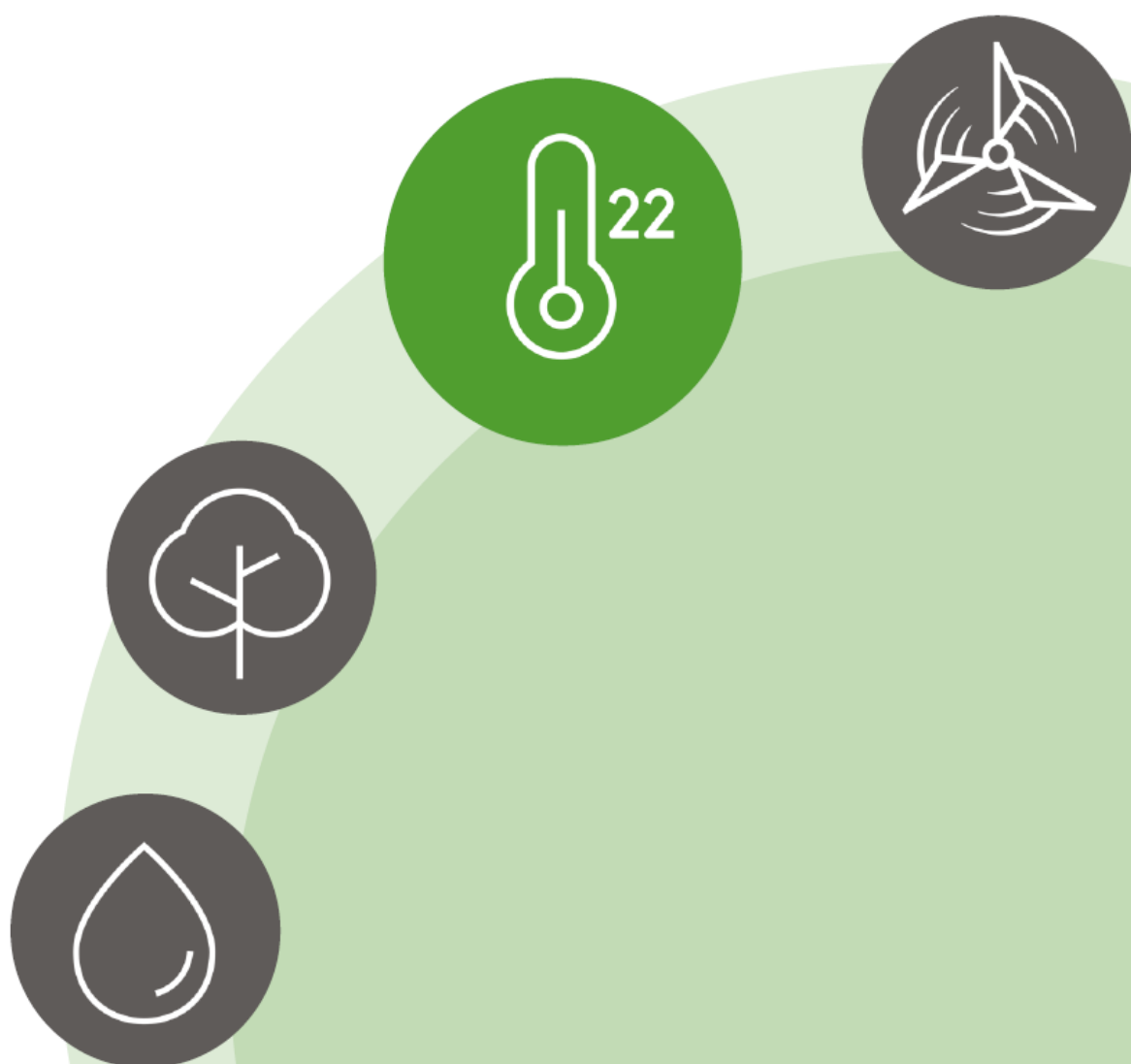




PART O ASSESSMENT

100 Residential Units, Hulbert Road

REPORT STATUS: 2.0



Document Control Sheet

Client	BRiCS Ltd
Development	100 Residential Units, Hulbert Road, Havant, PO9 3TA
Report Title	Dynamic Method Part O Assessment
Reason for Issue	For Planning Application

Quality Management:

Report No	2416L/07-01	
Issue	2.0	
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Prepared By	Muhammad Ali MSc MCIBCE	Surveyor ID: EES/032098
Authorised By	Naomi Sadler BSc(Hons) Dip MEnvSc	



About Sadler Energy and Environmental Services Ltd.

Our team of technical specialists offer advanced levels of expertise and experience to our clients. We have a wide experience of the construction and development industry from the concept and planning stage through to the completion of the project.

Our emphasis is to provide innovative and cost-effective solutions that respond to increasing demands for energy efficiency, quality and practical on-site applications.

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1. Executive Summary

This report outlines the results of a thermal comfort overheating assessment using dynamic modelling, carried out for BRiCS Ltd regarding the planned residential project, which includes 100 housing units with 11 different house types located at Hulbert Road, Havant, PO9 3TA. The acoustic consultant, Sound Advice Acoustics Ltd, performed an acoustic assessment that determined the windows could not be opened at night from 11:00 PM to 7:00 AM due to noise levels surpassing the part O standards. (Reference: Pre-App Noise Impact Assessment, Sa - 7662/Rev3).

According to the approved document Part O, all "11 house types" must be evaluated using CIBSE TM59 criteria through dynamic thermal modelling because of noise restrictions and other factors such as reduced free aperture area and/or limited opening times due to security and privacy concerns. To fully understand thermal comfort throughout the entire development, it is crucial to assess all plots using the TM59/Part O overheating assessment. Therefore, the relevant plots for each house type chosen for thermal modelling are listed below,

Houses Type	Sample Plot selected for Part O Assessment
HT-01	77
HT-02	86
HT-05	83
HT-06	75
HT-08	81
HT-09	96
HT-10	20
HT-11	10
HT-12	29
HT-13	25
HT-14	26

The study followed the CIBSE TM59 methodology to assess thermal comfort and identify solutions to mitigate overheating. Dynamic thermal modelling software (IES VE) is used to predict how the dwellings would perform against the overheating standards set by CIBSE TM59 and Part O of the building regulations. The study aims to identify and illustrate what mitigation measures are necessary to ensure the proposed dwellings are likely to remain thermally comfortable. Building Regulations Part O to prioritise the implementation of passive methods for limiting undesirable solar gains and eliminating excessive heat before resorting to mechanical cooling.

The initial assessment be assessed using CIBSE TM59 criteria through dynamic thermal modelling. This approach incorporated solar control glazing with a g value of 0.39, no mechanical ventilation, and closed bedroom windows during nighttime from 11:00 PM to 7:00 AM. The results showed that all bedrooms across all house types fail to meet TM59 and Part O criteria, primarily because the windows remain shut at night to mitigate noise pollution.

To address this problem, additional simulations were carried out, and two mitigation strategies for each were developed, as outlined in the Table 6: Mitigation strategy. Both mitigation strategies for all house types are summarised below:

-  **Mitigation Strategy 1:** Solar control glazing featuring a G value of 0.39, along with mechanical extract ventilation (MEV) system 3 for all bedrooms, equipped with acoustic trickle vents in the windows for all house types.
-  **Mitigation Strategy 2:** Solar control glazing (g-value 0.39) with Resi Vent Zero louvre vents integrated into bedroom windows.

Both mitigation strategies guarantee compliance with TM59 and Part O overheating standards.

2. Introduction

Sadler Energy & Environmental Services Ltd have been appointed by “BRICS Ltd” to assess the overheating risk for residential development of 100 residential units with 11 house types at Hulbert Road, Havant, PO9 3TA. Approved Document O was published by the UK government in December 2021. It is a new Building Regulation setting standards for overheating risk mitigation in new residential buildings in England.



Figure 1 – Approved Document O Front Cover [Source: Approved Document O]

The aim of Approved Document O is to, ‘protect the health and welfare of occupants of the building by reducing the occurrence of high indoor temperatures.

Compliance with Approved Document O can be demonstrated by using one of the two following methods:

-  The simplified method for limiting solar gains and providing a means of removing excess heat. This method is prescriptive in terms of window sizes and mechanical ventilation allowances; or
-  The dynamic thermal modelling method.

Method 2 - the dynamic thermal modelling method - offers greater design flexibility and has therefore been adopted for this development.

Approved Document O dictates that to demonstrate compliance using the dynamic thermal modelling method, the CIBSE TM59 methodology should be adopted. CIBSE TM59 was published in 2017 and provides a standardised approach to the dynamic thermal modelling procedure. This report utilises the overheating criteria set out in CIBSE TM52: 2013 - The limits of thermal comfort: avoiding overheating in European buildings and CIBSE TM59: 2017 - Design methodology for the assessment of overheating risk in homes to identify the severity of overheating risks and thermal discomfort.

Where overheating risk is identified, the report describes any passive or active measures required to achieve the acceptable level of thermal comfort.

3. Dynamic Thermal Modelling Method Compliance Checklist

Below is the Part O as designed compliance Checklist 2b for the dynamic thermal modelling approach detailed in Section 2 of part O. A copy of this checklist, or a similar checklist, may be submitted to the building control body as evidence that the building has been constructed as designed to reduce the risk of overheating.

Modelling details		
Dynamic software name and version	IES VE version 2024, which utilises the Energy Plus simulation calculation engine which is compliant with the requirements of CIBSE AM11: Building performance modelling (2015b).	
Weather file location used, including any additional, more extreme weather files	CIBSE Southampton DSY 1 2020's HIGH 50%	
Number of sample units modelled, including an explanation of why the size/selection has been chosen	11 Sample units (Plots= 77,86,83,75,81,96,20,10,29,25,26) are selected based on each house type	
Modelled occupancy		
Has the project passed the assessment described in CIBSE's TM59, considering the limits detailed in paragraphs 2.5 and 2.6?	Yes	No
Details of the occupancy profiles used	Appendix A	
Details of the equipment profiles used	Appendix A	
Details of the opening profiles used	Appendix A	
Modelled overheating mitigation strategy		
Free areas	Section 7.6-7.7	
Infiltration and mechanical flow rates	0.15 ACH (Infiltration) & (Mechanical Extract Ventilation MEV system 3) Table 6: Mitigation measures strategies	
Window g-value	G value = 0.39	
Shading strategy	N/A	
Mechanical cooling	N/A	
Mechanical cooling		
Has the project passed the assessment described in CIBSE's TM59, considering the limits detailed in paragraphs 2.5 and 2.6?	Yes	No
What is the overall overheating strategy (i.e., what design features are key to the project passing)?	Solar control glazing = 0.39 G value, incorporating mechanical extract ventilation MEV system 3 (Please see Table 6: Mitigation measures strategies).	
Designer's declaration		
Has the building construction proposal been modelled accurately?	Yes	No
Designer's name	Muhammad Ali	
Designer's organisation	Sadler Energy and Environmental Services Ltd	
Designer's signature	MA	
Registration number (if applicable)	EES/032098 (Elmhurst Overheating Competency Scheme)	
(if applicable) Date of design	June 2025	
*NOTE: 1. All references to paragraphs are to Approved Document O.		

4. Assessment Criteria

4.1 TM52: 2013 Overheating Criteria – Adaptive Thermal Comfort

CIBSE TM59 develops upon the TM52 methodology, with the specific intention of assessing overheating risk in dwelling. TM59: 2017 Overheating Criteria – Adaptive Thermal Comfort CIBSE TM59 was developed in addition to TM52 to provide a more defined and consistent methodology to assess the thermal comfort of homes. The document sets out specific heat gain profiles and guidance on when windows are permitted to be used to provide natural ventilation to mitigate excessive internal temperatures (details of which can be found later in this report).

The document provides separate assessment criteria guidance for homes which are predominantly naturally ventilated, including those with mechanical ventilation heat recovery (window minimum free areas should be at least 1:20th of the rooms floor area) and those which are predominantly mechanically ventilated because they have no or very limited provision for opening windows due (e.g., due to air or noise issues).

4.1.1 Criteria for homes predominantly naturally ventilated

Predominantly naturally ventilated homes should assess overheating using the adaptive method based on CIBSE TM52 (2013), as described below:

Compliance is based on passing both of the following two criteria:

(a) **For living rooms, kitchens and bedrooms:** The number of hours during which ΔT (the difference between operative and threshold comfort temperatures) is greater than or equal to one degree (K), during the period of May to September inclusive, shall not be more than 3 per cent of occupied hours. (CIBSE TM52 Criterion 1: Hours of exceedance).

(b) **For bedrooms only:** To evaluate comfort during the sleeping hours the operative temperature in the bedroom from 10 pm to 7 am shall not exceed 26°C for more than 1% of annual hours. (Note: 1% of the annual hours between 22:00 and 07:00 for bedrooms is 32 hours, so 33 or more hours above 26°C will be recorded as a fail).

Criteria 2 and 3 of CIBSE TM52 may fail to be met, but both (a) and (b) above must be passed for all relevant rooms.

The first criterion is evaluated in terms of the ΔT , which is the difference between the operative temperature (T_{op}) and the limiting maximum temperature (T_{max}), $\Delta T = T_{op} - T_{max}$. In order to estimate T_{op} , dynamic thermal modelling is carried out to compute the predicted temperature distribution in the different thermal zones of the building.

The maximum acceptable temperature is a function of the outdoor temperature and the design limits, which are shown below. The table details the suggested acceptability in terms of the temperature range of naturally ventilated buildings. TM52 provides recommendation for acceptable temperature ranges subject to building type and vulnerability of occupants.

Table 2 Suggested applicability of the categories and their associated acceptable temperature range for free-running buildings and of PMV for mechanically ventilated buildings (from BSI, 2007). The CIBSE suggestion is that designers should aim to remain within the Category II limits.

Category	Explanation	Suggested acceptable range (K)	Suggested acceptable limits PMV
I	High level of expectation only used for spaces occupied by very sensitive and fragile persons	± 2	± 0.2
II	Normal expectation (for new buildings and renovations)	± 3	± 0.5
III	A moderate expectation (used for existing buildings)	± 4	± 0.7
IV	Values outside the criteria for the above categories (only acceptable for a limited periods)	> 4	> 0.7

Figure 2: Excerpt from CIBSE TM52

In this case, all house types are classified under category II, which has a recommended acceptable temperature range of ± 3 K.

4.1.2 Criteria for homes predominantly mechanically ventilated

For homes with restricted window openings, the CIBSE fixed temperature method detailed in CIBSE Guide A(2015a) should be followed, i.e., all occupied rooms should not exceed an operative temperature of 26 °C for more than 3% of the annual occupied annual hours.

4.1.3 Criteria for Communal Corridors

The inclusion of corridors in the overheating analysis is mandatory for TM59 where community heating pipework runs through them. The overheating test for corridors is based on report the number of hours for which the operative temperature exceeds an operative temperature of 28 °C through the course of the year. Whilst there is no mandatory target to meet if an operative temperature of 28 °C is exceeded for more than 3% of the total annual house, this should be identified within the report as a significant risk.

5. The Development

The proposed development comprises 100 residential units at Hulbert Road, Havant, PO9 3TA.

There are no taller buildings or external structures in the vicinity that would provide meaningful shading to the proposed dwellings. As a result, the units are expected to receive full solar exposure, particularly when the sun is higher in the sky.

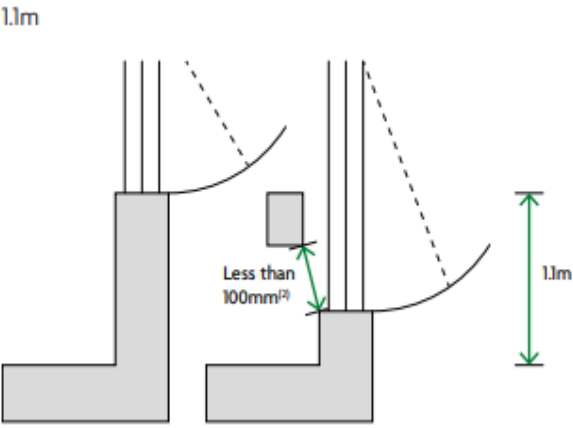
Furthermore, the site's proximity to main roads results in elevated noise levels, which necessitates limiting bedroom window openings between 11:00 PM and 7:00 AM to mitigate the impact of night-time noise on occupant comfort.



Figure 3 - Proposed Development

6. Design Considerations

The standards in this section have been included within the assessment which have been assessed and included within the overheating assessment where applicable.

Noise	
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).	The site is close proximity main roads, gives rise to noise, necessitating the restriction of bedroom window openings from 11:00 PM to 7:00 AM. The noise levels surpass the threshold outlined in the Approved Document O (ADO). (Reference: PRE-APP NOISE IMPACT ASSESSMENT, SA - 7662/Rev3).
Pollution (Part F)	
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	No site-specific issues regarding pollution are included within the assessment.
Security	
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	Open windows or doors can be made secure by using any of the following. a. Fixed or lockable louvred shutters. b. Fixed or lockable window grilles or railings.
Protection from falling (Part K)	
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. 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.	The Approved Document states that protection from falling must be taken into account in order to meet the Part O requirement O1(2)(a). Note this must be met in addition to Part K requirements. The Dwellings have been fitted with guarding to the first-floor openings and above. Restrictors are fitted only to the ground floor openings. *Note: Building Regulations Part B requires windows that are used for escape to have a maximum cill height of 1100mm. Meeting the requirements of both Part O and Part B therefore, in theory, leaves zero tolerance; in practice, DLUHC have clarified that a tolerance of +0 / -100mm is reasonable.
	
Protection from entrapment	

Louvered shutters, window railings and ventilation grilles should not allow body parts to become trapped. They should comply with all of the following: a. Not allow the passage of a 100mm diameter sphere. b. Any hole which allows the passage of an 8mm diameter rod should also allow the passage of a 25mm diameter rod. Such holes should not taper in a way that allows finger entrapment. c. Any looped cords must be fitted with child safety devices.	No louvered shutters are included within the assessment or proposed to be installed.
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7. Dynamic Modelling Assessment

7.1 Software

The model has been created using IES VE version 2024, which utilises the Energy Plus simulation calculation engine which is compliant with the requirements of CIBSE AM11: Building performance modelling (2015b). The analysis was conducted by a qualified and competent person who has undertaken a relevant course to enable them to carry out assessments in the IES VE software.

7.2 Reference Weather file

In accordance with the requirements of CIBSE TM59, the dynamic simulation modelling has been carried out using the CIBSE Design Summer Year weather file most appropriate for the building location.

TM59 states that we use the DSY 1 2020's HIGH 50% version for the relevant location. The methodology for selecting the warm years is the same as that used in TM49: Probabilistic DSY. There are now 3 DSYs available per location, representing summers with different types of hot events:

-  DSY1: Moderately warm summer
-  DSY2: Short, intense warm spell
-  DSY3: Long, less intense warm spell

For this reason, the CIBSE Southampton DSY 1 2020's HIGH 50% has been used in the modelling.

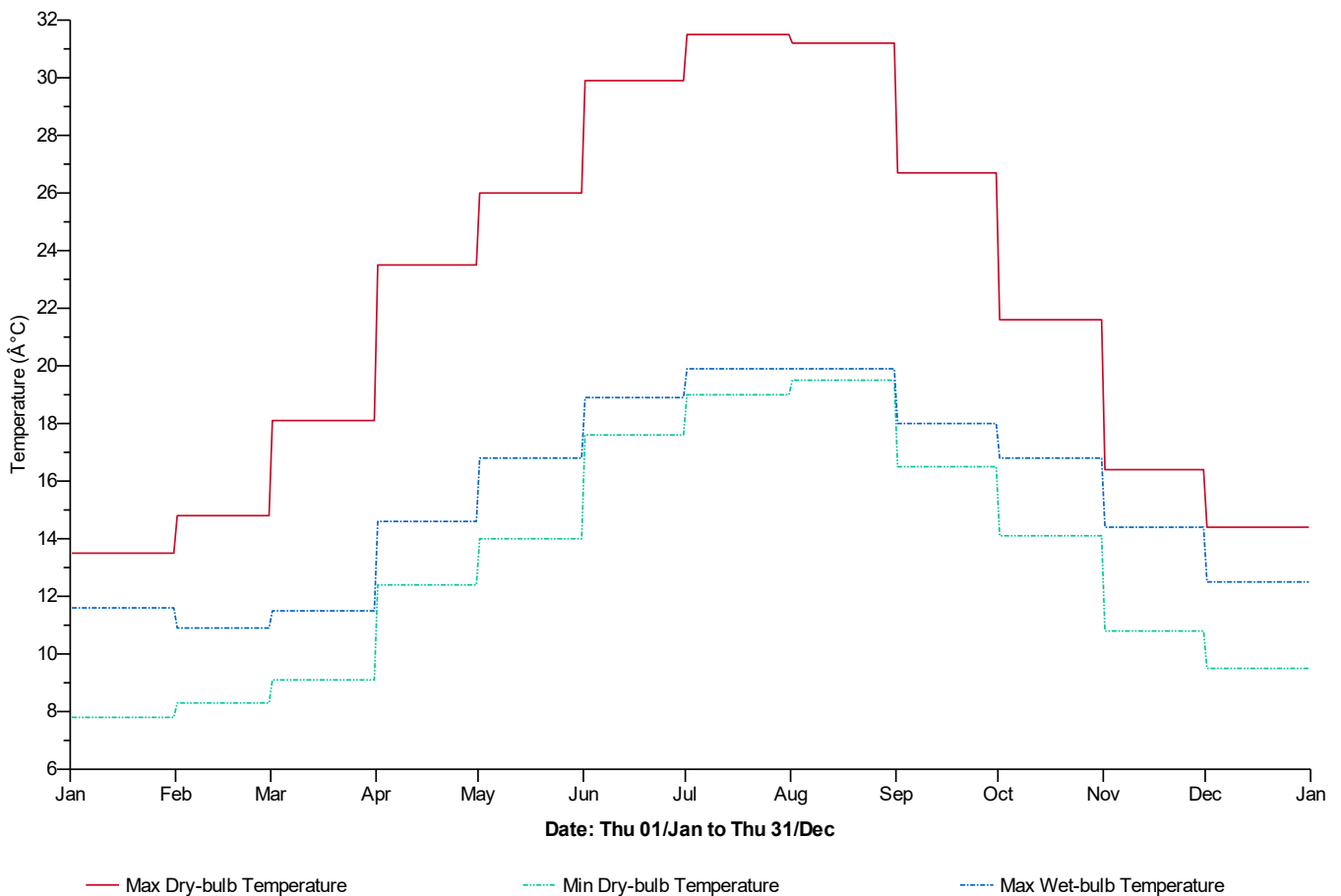


Figure 4: CIBSE Southampton DSY1 2020High50 characteristics.

7.3 Geometry and sample size

In accordance with Approved Document Part O, all 11 house types must be assessed against CIBSE TM59 criteria using dynamic thermal modelling. This requirement is driven by factors such as night-time noise constraints, single-aspect layouts, and reduced effective opening areas or restricted opening times due to security and privacy considerations.

To gain a comprehensive understanding of thermal comfort across the development, it is necessary to model a representative sample of plots covering the full range of dwelling types and geometries. This ensures that variations in layout, orientation, and ventilation potential are appropriately captured within the TM59/Part O overheating assessment.

Accordingly, the selected plots representing each house type for thermal modelling are listed below:

Houses Type	Sample Plot selected for Part O Assessment
HT-01	77
HT-02	86
HT-05	83
HT-06	75
HT-08	81
HT-09	96
HT-10	20
HT-11	10
HT-12	29
HT-13	25
HT-14	26

7.4 Model Image

Image 1



Image 2

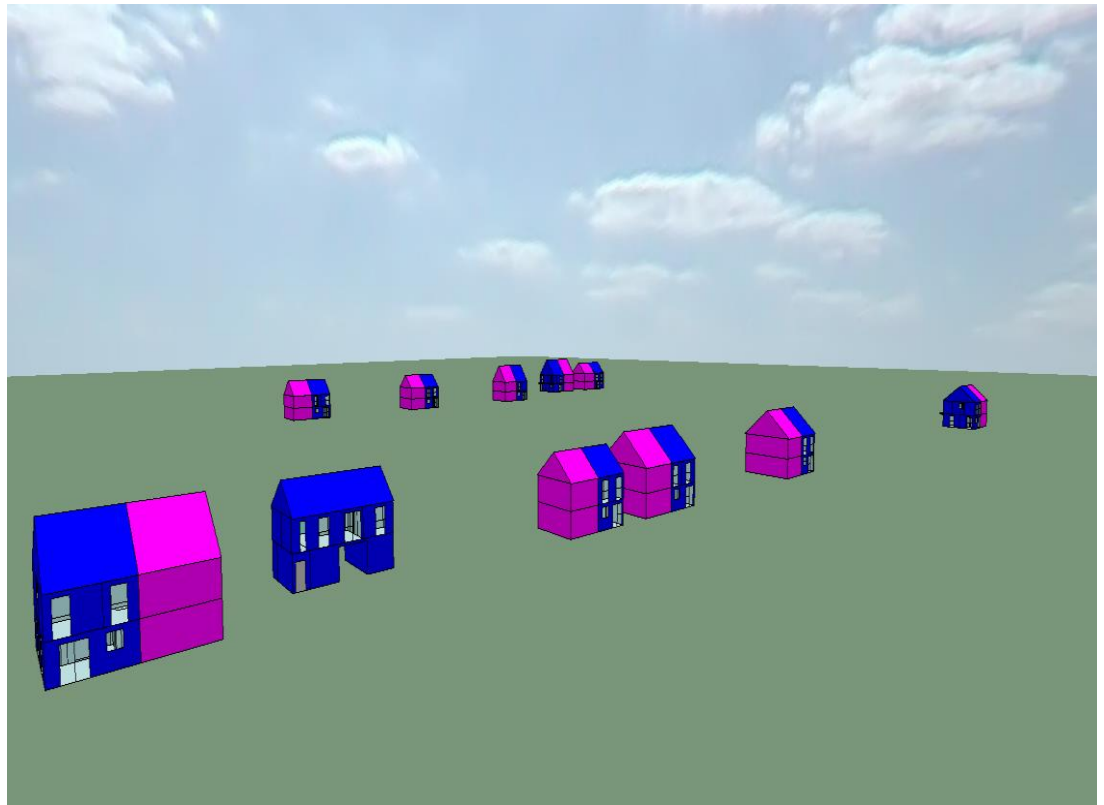
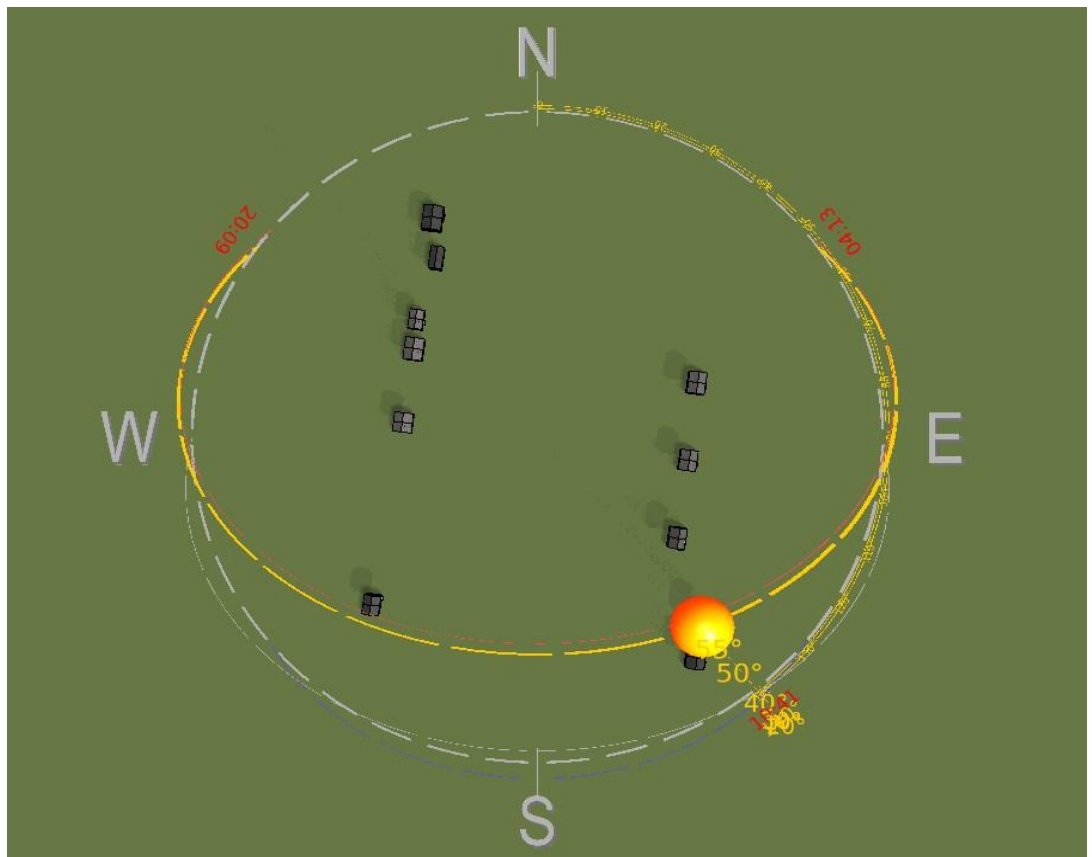


Image 3



7.5 Building Form and Fabric

The building form has been modelled in line with the latest architectural drawings. These plans have been used to inform the internal layouts and glazing provision within the thermal model. The model geometry has been constructed with IES VE software.

The geometry is modelled to an accuracy necessary to reflect the below:

-  Internal volume of each occupied room; and
-  Extent of shading to each occupied room.

Pitched roofs and associated ceiling voids can be appropriately modelled thermally by applying the thermal heat transfer properties to 'flat' roof areas in IES VE software.

The U Values and G Values of the building fabric have been modelled as set out in Table 2, below. The table below summarises the proposed performance of the thermal envelope. These U values have been sourced from the SAP assessor on the scheme.

Thermal Element	BR U-value (Part L 2021) W/m ² K	Proposed target values W/m ² K
Ground Floor	0.18	0.11
External Wall	0.26	0.18
Planed Roof	0.16	0.07
External Doors	1.6	1.0
Windows & Glazed Doors	1.6	0.72 G-value 0.39

Table 2 - Proposed Fabric Standard

Thermal mass is the ability of a material to absorb, store and then release heat. Thermal mass can be beneficial to the mitigation of overheating in a building as it provides a degree of inertia against temperature fluctuations – and can reduce the peak internal temperatures in occupied spaces.

7.6 TM59 Assumptions

Metabolic Rates	130 w (sensible = 65W, latent = 65w)	TM59
Lighting	2 W/m ²	TM59 Default
Main zonal temperature setpoints	Various	TM59 Default
Equipment IHG & Schedules	Various	TM59 Defaults – see Appendix
HWS	2.1 kWh/24	(Assumed) TM59 Requires HWS losses to be included
Internal Air Speed	0.1m/s	TM59 Default
Nat Vent Summer Minimum Temp	22°C	TM59 Default

Table 3 – TM59 Assumptions for overheating modelling

7.7 TM59 Window & doors opening

Further requirements beyond the CIBSE TM59 defined methodology are set out in Approved Document O as below for inclusion in the thermal model:

When a room is occupied during the day (8am to 11pm), openings should be modelled to do all of the following:

1. Start to open when the internal temperature exceeds 22°C;
2. Be fully open when the internal temperature exceeds 26°C;
3. Start to close when the internal temperature falls below 26°C; and
4. Be fully closed when the internal temperature falls below 22°C.

At night (11pm to 8am), openings should be modelled as fully open if both the following apply:

1. The opening is on the first floor or above and not easily accessible; and
2. The internal temperature exceeds 23°C at 11pm.

When a ground floor or easily accessible room is unoccupied, both of the following apply:

1. In the day, windows, patio doors and balcony doors should be modelled as open, if this can be done securely; and
2. At night, windows, patio doors and balcony doors should be modelled as closed.

An entrance door should be included, which should be shut at all the time.

Location	Opening	Schedule
Ground Floor Glazing	0% 100%	23:00 – 08:00 (Restricted due to security reasons) Other Times
1 st & 2 nd Floor Glazing	100%	Occupancy
Bedrooms Windows	0% 100%	23:00 – 08:00 (Restricted due to noise reasons) Other Times
Bedroom Internal Doors	0% 100%	23:00 – 08:00 Other Times
Entrance Door	0%	All Time

Table 4 – Dwelling windows/Doors schedule for TM59 overheating modelling.

7.8 Infiltration

An infiltration rate of 0.15 air changes per hour (ACH) has been used in the model. This infiltration rate has been derived from CIBSE Guide A 2015 for a building with an air permeability of 3 m³/hm² at 50Pa.

7.9 Load Profiling

Dynamic Simulation Modelling software such as IES VE use profiles to account for variations in occupancy, peak gains (associated with lighting, equipment, heating) and ventilation rate throughout the days, week and months of the year.

This section defines the occupancy and load profiles used for various space types. The typical occupancies and peak gains expected within each room type are detailed in the tables below, and the profile indicates how much of the at what times those peaks will be achieved. For a room with an occupancy of 4 for example, a fraction of 1 would indicate that 4 people are present, whereas a fraction of 0.25 would indicate just 1 person. The same applies for peak gains.

7.10 Occupancy and heat gain profiles – TM59 Modelling

The load profiles for residential spaces are defined by TM59 and applied Monday to Sunday throughout the year.

<u>Description</u>	<u>Peak Load (W)</u>	
	<u>Sensible</u>	<u>Latent</u>
Double bedroom occupancy	150	110
3-bedroom living-kitchen occupancy	225	165
3-bedroom living occupancy	225	165
4-bedroom living-kitchen occupancy	300	220
4-bedroom living occupancy	300	220
Double bedroom equipment	80	
Living/kitchen equipment	450	
Living equipment	150	
Lighting profile	2W/m ²	

Table 5 –TM59 gains data.

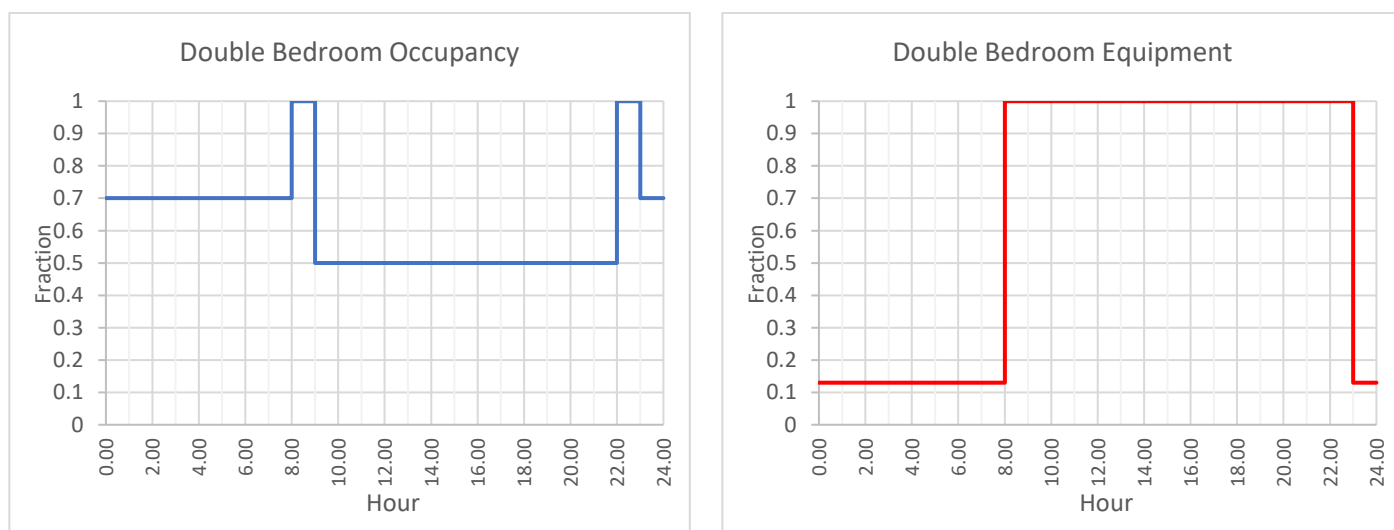


Figure 5 - Heat gain profile - double bedroom

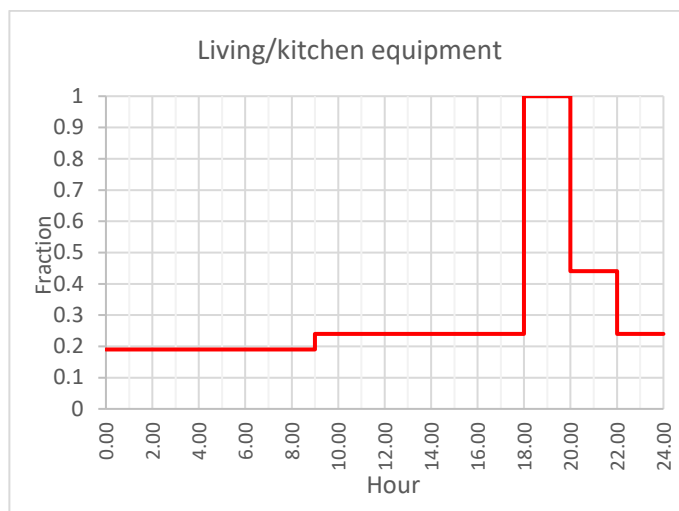
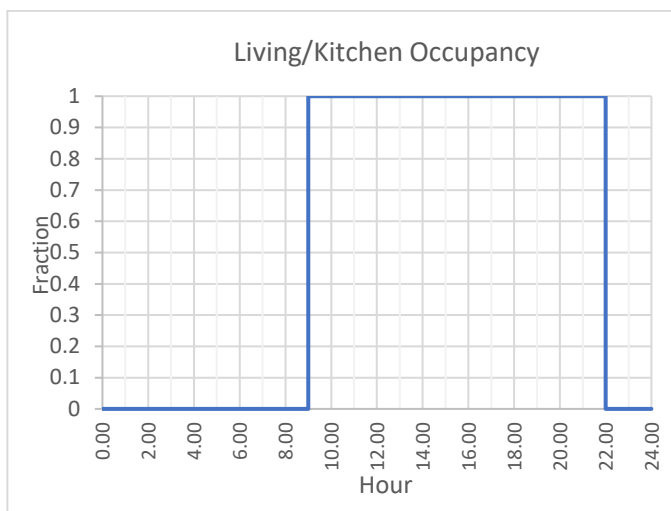


Figure 6 - Heat gain profile - living room/kitchen.

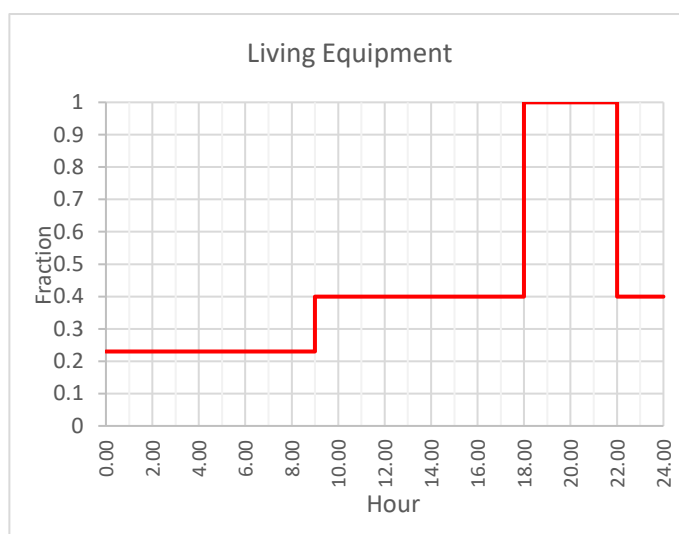
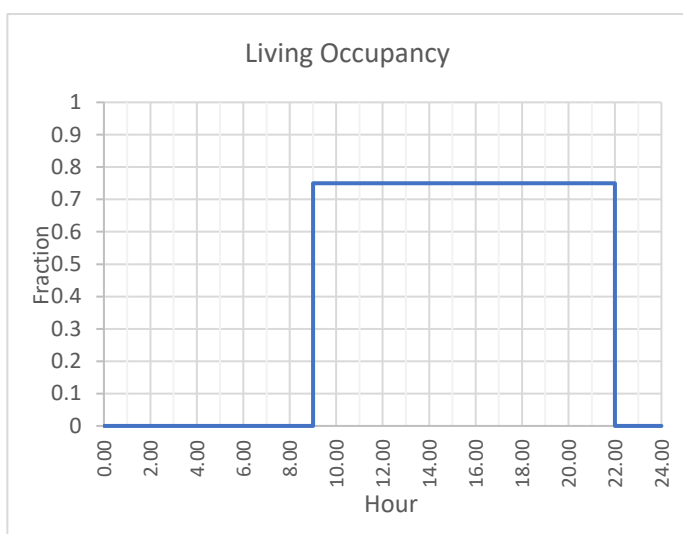


Figure 7 - Heat gain profile - living room.

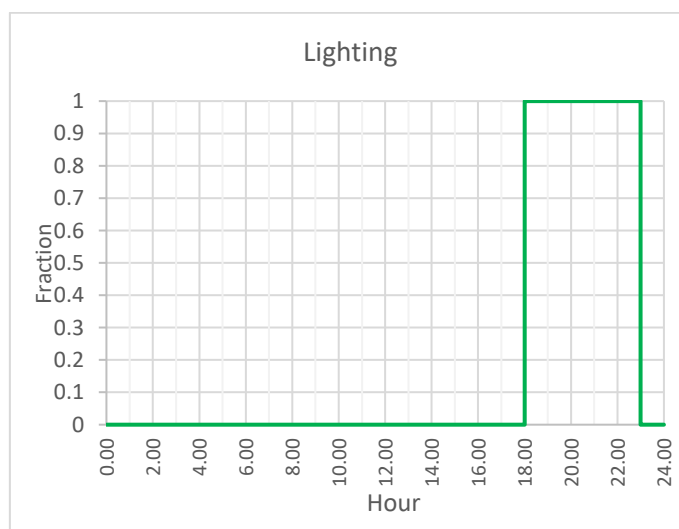


Figure 8 - Heat gain profile – lighting

7.11 Ventilation Strategy

Purge ventilation through openable windows has been shown to significantly reduce internal temperatures, effectively limiting overheating to acceptable levels. This strategy also aids in removing high concentrations of pollutants and water vapor.

In accordance with TM59 and Approved Document O (ADO), it has been calculated that windows will begin to open when internal temperatures exceed 22°C to maintain thermal comfort conditions. The openable areas of windows and doors have been derived from the architectural drawings, with window specifications provided by the client.

The window opening angles and their associated equivalent areas have been calculated based on a maximum reach of 650mm from the inside face of the wall, as defined within ADO.

To meet the requirements of TM59, Mechanical Extract Ventilation (MEV) system 3 has been modeled to achieve compliance. However, the mechanical system incorporates passive strategies as detailed in Table 6: Mitigation Measures Strategies.

7.12 Building Shading

Radiant heat from the sun passes through the glass and is absorbed by the building elements and furnishings, which then re-radiates heat back into the space. Re-radiated heat has a different wavelength and cannot pass back through the glass as easily, thus trapping the radiant heat, causing heat gains in the building. Unprotected glass is often the greatest source of unwanted heat gain in a building. The simulation model calculates the effect of beam and sky diffuse solar radiation and shading from exterior surfaces and other parts of the building. All external reflections and shading from ground reflected solar have also been modelled.

In accordance with the Part O regulations & methodology the effect of internal blinds has not been included in the model.

“2.8 Although internal blinds and curtains provide some reduction in solar gains, they should not be taken into account when considering whether requirement O1 has been met. “

Also

“2.9 Foliage, such as tree cover, can provide some reduction in solar gains. However, it should not be taken into account when considering whether requirement O1 has been met.”

8. Results

8.1 Initial Results

To meet the recommendation set out in CIBSE Guide TM59 (2017), the rooms must pass both criteria set in out in section 3.2.

Items within the table are as follows:

 In **Red** DO NOT comply with the CIBSE recommendation

 In **green** DO comply with the CIBSE recommendations

Standard Specs include:

 **G value = 0.39**

 **Fully openable windows - Window sill height should be designed to ensure window can safely open (B.R Part O Guarding Requirements). Or utilising 100% opening window that open inwards throughout (to avoid fall risk) as per original window schedule.**

The initial assessment be assessed using CIBSE TM59 criteria through dynamic thermal modelling. This approach incorporated solar control glazing with a g value of 0.39, no mechanical ventilation, and closed bedroom windows from 11:00 PM to 7:00 AM. The results showed that none of the bedrooms across all house types met the TM59 and Part O criteria, primarily because the windows remain shut at night to mitigate noise pollution.

Naturally ventilated rooms – criterion (a)

Criterion (a) states that for living rooms, kitchens and bedrooms, the number of hours during which ΔT is greater than or equal to 1K from May to September (or November to March for southern hemisphere locations) shall not exceed 3% of occupied hours.

Room name	Occupied hours	No. hours $\Delta T \geq 1^\circ\text{K}$	% Occupied hours $\Delta T \geq 1^\circ\text{K}$	Criterion a check
HT-01-Plot77-Bed 1	3672	20	0.5	Pass
HT-01-Plot77-Bed 2	3672	29	0.8	Pass
HT-01-Plot77-KLD	1989	20	1	Pass
HT-02-Plot86-Bed 1	3672	23	0.6	Pass
HT-02-Plot86-Bed 2	3672	35	1	Pass
HT-02-Plot86-Kitchen	1989	35	1.8	Pass
HT-02-Plot86-Living	1989	26	1.3	Pass
HT-05-Plot83-Bed 1	3672	17	0.5	Pass
HT-05-Plot83-Bed 2	3672	21	0.6	Pass
HT-05-Plot83-Bed 3	3672	37	1	Pass
HT-05-Plot83-Kitchen	1989	33	1.7	Pass
HT-05-Plot83-Living	1989	26	1.3	Pass
HT-06-Plot75-Bed 1	3672	16	0.4	Pass
HT-06-Plot75-Bed 2	3672	23	0.6	Pass
HT-06-Plot75-Bed 3	3672	30	0.8	Pass

HT-06-Plot75-Bed 4	3672	73	2	Pass
HT-06-Plot75-Kitchen	1989	28	1.4	Pass
HT-06-Plot75-Living	1989	28	1.4	Pass
HT-08-Plot81-Bed 1	3672	40	1.1	Pass
HT-08-Plot81-Bed 2	3672	44	1.2	Pass
HT-08-Plot81-Kitchen	1989	35	1.8	Pass
HT-08-Plot81-Living	1989	22	1.1	Pass
HT-09-Plot96-Bed 1	3672	54	1.5	Pass
HT-09-Plot96-Bed 2	3672	31	0.8	Pass
HT-09-Plot96-Kitchen	1989	43	2.2	Pass
HT-09-Plot96-Living	1989	22	1.1	Pass
HT-10-Plot20-Bed 1	3672	28	0.8	Pass
HT-10-Plot20-Bed 2	3672	26	0.7	Pass
HT-10-Plot20-Bed 3	3672	29	0.8	Pass
HT-10-Plot20-Kitchen	1989	40	2	Pass
HT-10-Plot20-Living	1989	26	1.3	Pass
HT-11-Plot10-Bed 1	3672	19	0.5	Pass
HT-11-Plot10-Bed 2	3672	30	0.8	Pass
HT-11-Plot10-Bed 3	3672	31	0.8	Pass
HT-11-Plot10-Kitchen	1989	33	1.7	Pass
HT-11-Plot10-Living	1989	26	1.3	Pass
HT-12-Plot29-Bed 1	3672	25	0.7	Pass
HT-12-Plot29-Bed 2	3672	79	2.2	Pass
HT-12-Plot29-Bed 3	3672	22	0.6	Pass
HT-12-Plot29-Bed 4	3672	47	1.3	Pass
HT-12-Plot29-Kitchen	1989	34	1.7	Pass
HT-12-Plot29-Living	1989	29	1.5	Pass
HT-13-Plot25-Bed 1	3672	20	0.5	Pass
HT-13-Plot25-Bed 2	3672	23	0.6	Pass
HT-13-Plot25-Bed 3	3672	34	0.9	Pass
HT-13-Plot25-Kitchen	1989	40	2	Pass
HT-13-Plot25-Living	1989	24	1.2	Pass
HT-14-Plot26-Bed 1	3672	62	1.7	Pass
HT-14-Plot26-Bed 2	3672	21	0.6	Pass
HT-14-Plot26-Bed 3	3672	10	0.3	Pass
HT-14-Plot26-Bed 4	3672	10	0.3	Pass
HT-14-Plot26-Kitchen	1989	26	1.3	Pass
HT-14-Plot26-Living	1989	29	1.5	Pass

Naturally ventilated rooms – criterion (b)

Criterion (b) states that the operative temperature of the bedrooms from 22:00-07:00 shall not exceed 26°C for more than 1% of annual hours (33 hours is therefore recorded as a fail). Any rooms that are not bedrooms are therefore not assessed, hence the corresponding N/A values.

Room name	No. hours > 26°C	No. hours > 26°C	Total hours > 26°C	Criterion b check
	22:00-24:00	00:00-07:00		
HT-01-Plot77-Bed 1	16	196	212	Fail
HT-01-Plot77-Bed 2	14	73	87	Fail
HT-01-Plot77-KLD	N/A	N/A	N/A	N/A
HT-02-Plot86-Bed 1	14	86	100	Fail
HT-02-Plot86-Bed 2	18	196	214	Fail
HT-02-Plot86-Kitchen	N/A	N/A	N/A	N/A
HT-02-Plot86-Living	N/A	N/A	N/A	N/A
HT-05-Plot83-Bed 1	15	85	100	Fail
HT-05-Plot83-Bed 2	17	203	220	Fail
HT-05-Plot83-Bed 3	13	60	73	Fail
HT-05-Plot83-Kitchen	N/A	N/A	N/A	N/A
HT-05-Plot83-Living	N/A	N/A	N/A	N/A
HT-06-Plot75-Bed 1	15	129	144	Fail
HT-06-Plot75-Bed 2	17	206	223	Fail
HT-06-Plot75-Bed 3	13	85	98	Fail
HT-06-Plot75-Bed 4	12	142	154	Fail
HT-06-Plot75-Kitchen	N/A	N/A	N/A	N/A
HT-06-Plot75-Living	N/A	N/A	N/A	N/A
HT-08-Plot81-Bed 1	20	216	236	Fail
HT-08-Plot81-Bed 2	17	248	265	Fail
HT-08-Plot81-Kitchen	N/A	N/A	N/A	N/A
HT-08-Plot81-Living	N/A	N/A	N/A	N/A
HT-09-Plot96-Bed 1	20	214	234	Fail
HT-09-Plot96-Bed 2	14	148	162	Fail
HT-09-Plot96-Kitchen	N/A	N/A	N/A	N/A
HT-09-Plot96-Living	N/A	N/A	N/A	N/A
HT-10-Plot20-Bed 1	19	228	247	Fail
HT-10-Plot20-Bed 2	14	90	104	Fail
HT-10-Plot20-Bed 3	14	85	99	Fail
HT-10-Plot20-Kitchen	N/A	N/A	N/A	N/A
HT-10-Plot20-Living	N/A	N/A	N/A	N/A
HT-11-Plot10-Bed 1	18	176	194	Fail
HT-11-Plot10-Bed 2	19	234	253	Fail
HT-11-Plot10-Bed 3	14	89	103	Fail

HT-11-Plot10-Kitchen	N/A	N/A	N/A	N/A
HT-11-Plot10-Living	N/A	N/A	N/A	N/A
HT-12-Plot29-Bed 1	16	239	255	Fail
HT-12-Plot29-Bed 2	20	330	350	Fail
HT-12-Plot29-Bed 3	14	85	99	Fail
HT-12-Plot29-Bed 4	12	137	149	Fail
HT-12-Plot29-Kitchen	N/A	N/A	N/A	N/A
HT-12-Plot29-Living	N/A	N/A	N/A	N/A
HT-13-Plot25-Bed 1	16	172	188	Fail
HT-13-Plot25-Bed 2	12	83	95	Fail
HT-13-Plot25-Bed 3	14	92	106	Fail
HT-13-Plot25-Kitchen	N/A	N/A	N/A	N/A
HT-13-Plot25-Living	N/A	N/A	N/A	N/A
HT-14-Plot26-Bed 1	20	296	316	Fail
HT-14-Plot26-Bed 2	15	222	237	Fail
HT-14-Plot26-Bed 3	10	80	90	Fail
HT-14-Plot26-Bed 4	10	87	97	Fail
HT-14-Plot26-Kitchen	N/A	N/A	N/A	N/A
HT-14-Plot26-Living	N/A	N/A	N/A	N/A

8.2 Mitigation measures

To address the overheating issues identified in the bedrooms, additional dynamic simulations were undertaken. Based on these results, tailored mitigation strategies were developed for both house and apartment types, as detailed in Table 6: Mitigation Measures. These strategies ensure full compliance with CIBSE TM59 and Part O overheating criteria.

House/Flat Type & Plot No.	Mitigation Strategies		
	Mitigation Strategy 1		Mitigation Strategy 2
HT-01 (Plot 77) HT-02 (Plot 86) HT-05 (Plot 83) HT-06 (Plot 75) HT-08 (Plot 81) HT-09 (Plot 96) HT-10 (Plot 20) HT-11 (Plot 10) HT-12 (Plot 29) HT-13 (Plot 25) HT-14 (Plot 26)	1- Glazing & Shading : To minimise solar gains, the glazing g value has been proposed as 0.39		1- Glazing & Shading : To minimise solar gains, the glazing g value has been proposed as 0.39
	2- Mechanical Ventilation : Mechanical ventilation has been modelled to whole dwelling on a 24/7 to mimic MEV system 3 with accoustic trickle which will maintain the required air changes per hour (ACH) in the following bedrooms.		2- To ensure optimal airflow at night, Resi Vent Zero (louver vent) has been integrated into bedroom windows.
			Resi Vent Zero (Height 1.1m X Width 0.55m) Product Brochure APPENDIX B
			

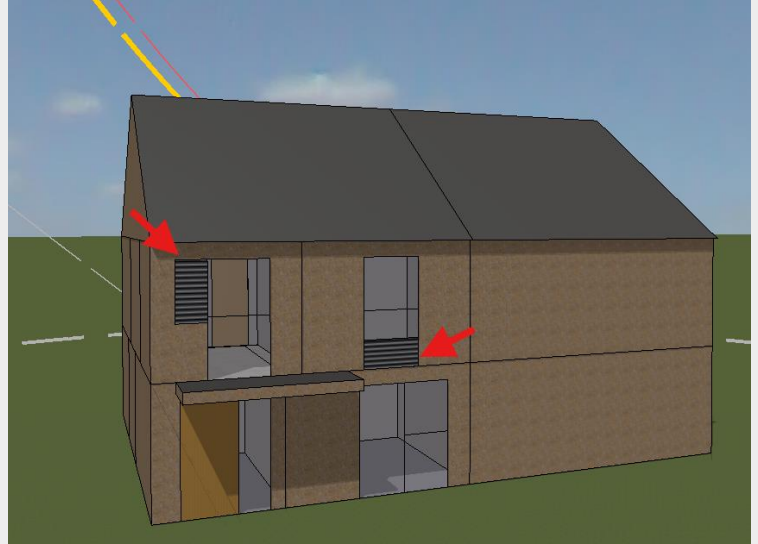
	HT-10-Plot20-Bed 2	1.75	9.1
	HT-10-Plot20-Bed 3	1.5	8.4
	HT-11-Plot10-Bed 1	2	15.9
	HT-11-Plot10-Bed 2	2.25	17.8
	HT-11-Plot10-Bed 3	1.5	8.2
	HT-12-Plot29-Bed 1	1.5	11.7
	HT-12-Plot29-Bed 2	1.75	13.7
	HT-12-Plot29-Bed 3	1.75	10.0
	HT-12-Plot29-Bed 4	1.75	9.7
	HT-13-Plot25-Bed 1	1.75	13.7
	HT-13-Plot25-Bed 2	1.75	9.2
	HT-13-Plot25-Bed 3	1.5	8.2
	HT-14-Plot26-Bed 1	1.5	12.4
	HT-14-Plot26-Bed 2	1.5	12.4
	HT-14-Plot26-Bed 3	1.5	7.9
	HT-14-Plot26-Bed 4	1.5	7.9
	Background ventilators like trickles in windows should be provided in accordance with Approved Document F and acoustic requirements. To ensure good transfer of air throughout the dwelling, there should be an undercut of minimum area 7600mm² in all internal doors above the floor finish. This is equivalent to an undercut of 10mm for a standard 760mm width door. Ensure that the air transfer provision is unrestricted after floor finishes have been laid (e.g. carpets should not encroach).		
	 Mechanical Ventilation Not required		

Table 6: Mitigation measures strategies

8.3 Results with mitigation measures

Naturally ventilated rooms – criterion (b)

Criterion (b) states that the operative temperature of the bedrooms from 22:00-07:00 shall not exceed 26°C for more than 1% of annual hours (33 hours is therefore recorded as a fail). Any rooms that are not bedrooms are therefore not assessed, hence the corresponding N/A values.

Results with mitigation strategy 1

Room name	No. hours > 26°C	No. hours > 26°C	Total hours > 26°C	Criterion b check
	22:00-24:00	00:00-07:00		
HT-01-Plot77-Bed 1	8	18	26	Pass
HT-01-Plot77-Bed 2	8	11	19	Pass
HT-01-Plot77-KLD	N/A	N/A	N/A	N/A
HT-02-Plot86-Bed 1	8	15	23	Pass
HT-02-Plot86-Bed 2	8	17	25	Pass
HT-02-Plot86-Kitchen	N/A	N/A	N/A	N/A
HT-02-Plot86-Living	N/A	N/A	N/A	N/A
HT-05-Plot83-Bed 1	8	16	24	Pass
HT-05-Plot83-Bed 2	8	18	26	Pass
HT-05-Plot83-Bed 3	8	16	24	Pass
HT-05-Plot83-Kitchen	N/A	N/A	N/A	N/A
HT-05-Plot83-Living	N/A	N/A	N/A	N/A
HT-06-Plot75-Bed 1	8	23	31	Pass
HT-06-Plot75-Bed 2	8	24	32	Pass
HT-06-Plot75-Bed 3	8	7	15	Pass
HT-06-Plot75-Bed 4	8	9	17	Pass
HT-06-Plot75-Kitchen	N/A	N/A	N/A	N/A
HT-06-Plot75-Living	N/A	N/A	N/A	N/A
HT-08-Plot81-Bed 1	8	22	30	Pass
HT-08-Plot81-Bed 2	8	19	27	Pass
HT-08-Plot81-Kitchen	N/A	N/A	N/A	N/A
HT-08-Plot81-Living	N/A	N/A	N/A	N/A
HT-09-Plot96-Bed 1	8	16	24	Pass
HT-09-Plot96-Bed 2	8	17	25	Pass
HT-09-Plot96-Kitchen	N/A	N/A	N/A	N/A
HT-09-Plot96-Living	N/A	N/A	N/A	N/A
HT-10-Plot20-Bed 1	8	17	25	Pass
HT-10-Plot20-Bed 2	8	23	31	Pass
HT-10-Plot20-Bed 3	8	10	18	Pass

HT-10-Plot20-Kitchen	N/A	N/A	N/A	N/A
HT-10-Plot20-Living	N/A	N/A	N/A	N/A
HT-11-Plot10-Bed 1	8	17	25	Pass
HT-11-Plot10-Bed 2	8	15	23	Pass
HT-11-Plot10-Bed 3	8	10	18	Pass
HT-11-Plot10-Kitchen	N/A	N/A	N/A	N/A
HT-11-Plot10-Living	N/A	N/A	N/A	N/A
HT-12-Plot29-Bed 1	8	20	28	Pass
HT-12-Plot29-Bed 2	8	15	23	Pass
HT-12-Plot29-Bed 3	8	19	27	Pass
HT-12-Plot29-Bed 4	8	20	28	Pass
HT-12-Plot29-Kitchen	N/A	N/A	N/A	N/A
HT-12-Plot29-Living	N/A	N/A	N/A	N/A
HT-13-Plot25-Bed 1	8	23	31	Pass
HT-13-Plot25-Bed 2	8	18	26	Pass
HT-13-Plot25-Bed 3	8	11	19	Pass
HT-13-Plot25-Kitchen	N/A	N/A	N/A	N/A
HT-13-Plot25-Living	N/A	N/A	N/A	N/A
HT-14-Plot26-Bed 1	8	22	30	Pass
HT-14-Plot26-Bed 2	8	16	24	Pass
HT-14-Plot26-Bed 3	8	21	29	Pass
HT-14-Plot26-Bed 4	8	16	24	Pass
HT-14-Plot26-Kitchen	N/A	N/A	N/A	N/A
HT-14-Plot26-Living	N/A	N/A	N/A	N/A

Results with mitigation strategy 2

Room name	No. hours > 26°C	No. hours > 26°C	Total hours > 26°C	Criterion b check
	22:00-24:00	00:00-07:00		
HT-01-Plot77-Bed 1	8	14	22	Pass
HT-01-Plot77-Bed 2	8	4	12	Pass
HT-01-Plot77-KLD	N/A	N/A	N/A	N/A
HT-02-Plot86-Bed 1	2	1	3	Pass
HT-02-Plot86-Bed 2	8	17	25	Pass
HT-02-Plot86-Kitchen	N/A	N/A	N/A	N/A
HT-02-Plot86-Living	N/A	N/A	N/A	N/A
HT-05-Plot83-Bed 1	8	9	17	Pass
HT-05-Plot83-Bed 2	8	13	21	Pass

HT-05-Plot83-Bed 3	3	0	3	Pass
HT-05-Plot83-Kitchen	N/A	N/A	N/A	N/A
HT-05-Plot83-Living	N/A	N/A	N/A	N/A
HT-06-Plot75-Bed 1	8	9	17	Pass
HT-06-Plot75-Bed 2	8	11	19	Pass
HT-06-Plot75-Bed 3	2	0	2	Pass
HT-06-Plot75-Bed 4	2	0	2	Pass
HT-06-Plot75-Kitchen	N/A	N/A	N/A	N/A
HT-06-Plot75-Living	N/A	N/A	N/A	N/A
HT-08-Plot81-Bed 1	8	14	22	Pass
HT-08-Plot81-Bed 2	5	1	6	Pass
HT-08-Plot81-Kitchen	N/A	N/A	N/A	N/A
HT-08-Plot81-Living	N/A	N/A	N/A	N/A
HT-09-Plot96-Bed 1	8	14	22	Pass
HT-09-Plot96-Bed 2	2	1	3	Pass
HT-09-Plot96-Kitchen	N/A	N/A	N/A	N/A
HT-09-Plot96-Living	N/A	N/A	N/A	N/A
HT-10-Plot20-Bed 1	8	14	22	Pass
HT-10-Plot20-Bed 2	8	5	13	Pass
HT-10-Plot20-Bed 3	3	0	3	Pass
HT-10-Plot20-Kitchen	N/A	N/A	N/A	N/A
HT-10-Plot20-Living	N/A	N/A	N/A	N/A
HT-11-Plot10-Bed 1	8	11	19	Pass
HT-11-Plot10-Bed 2	8	14	22	Pass
HT-11-Plot10-Bed 3	3	0	3	Pass
HT-11-Plot10-Kitchen	N/A	N/A	N/A	N/A
HT-11-Plot10-Living	N/A	N/A	N/A	N/A
HT-12-Plot29-Bed 1	8	5	13	Pass
HT-12-Plot29-Bed 2	8	5	13	Pass
HT-12-Plot29-Bed 3	8	3	11	Pass
HT-12-Plot29-Bed 4	6	2	8	Pass
HT-12-Plot29-Kitchen	N/A	N/A	N/A	N/A
HT-12-Plot29-Living	N/A	N/A	N/A	N/A
HT-13-Plot25-Bed 1	8	10	18	Pass
HT-13-Plot25-Bed 2	8	2	10	Pass
HT-13-Plot25-Bed 3	4	0	4	Pass
HT-13-Plot25-Kitchen	N/A	N/A	N/A	N/A
HT-13-Plot25-Living	N/A	N/A	N/A	N/A
HT-14-Plot26-Bed 1	8	4	12	Pass
HT-14-Plot26-Bed 2	8	4	12	Pass
HT-14-Plot26-Bed 3	4	1	5	Pass

HT-14-Plot26-Bed 4	4	0	4	Pass
HT-14-Plot26-Kitchen	N/A	N/A	N/A	N/A
HT-14-Plot26-Living	N/A	N/A	N/A	N/A

9. Conclusion

This report presents the outcomes of a thermal comfort and overheating assessment, undertaken using dynamic thermal modelling for BRICS Ltd, in relation to the proposed development of 100 residential units at Hulbert Road, Havant. The assessment was carried out at the planning stage.

As part of the wider planning process, an acoustic assessment was conducted by Sound Advice Acoustics Ltd (Ref: *PRE-APP NOISE IMPACT ASSESSMENT, SA – 7662/Rev3*), which concluded that bedroom windows cannot be opened between 11:00 PM and 7:00 AM due to external noise levels exceeding Part O thresholds.

The initial thermal analysis followed CIBSE TM59 methodology and incorporated:

-  Solar control glazing with a g-value of 0.39
-  No mechanical ventilation
-  Bedroom windows closed overnight (11:00 PM to 7:00 AM) due to acoustic constraints

Under these conditions, none of the bedroom spaces across all house types complied with TM59 and Part O overheating criteria, with the primary issue being the inability to purge heat during night-time hours.

To resolve this, additional simulations were undertaken, and two mitigation strategies were developed and tested across all house types. These are summarised in Table 6: Mitigation Measures and outlined below. Both strategies successfully ensure compliance with TM59 and Part O standards.

Summary of Proposed Mitigation Strategies

-  Mitigation Strategy 1:
 - Solar control glazing (g-value 0.39)
 - MEV System 3 (Mechanical Extract Ventilation) installed in all bedrooms
 - Acoustic trickle vents integrated into windows
-  Mitigation Strategy 2:
 - Solar control glazing (g-value 0.39)
 - ResiVent Zero acoustic louvre vents incorporated into bedroom windows

This overheating assessment confirms that, with either of the proposed passive design-led mitigation strategies, the development achieves full compliance with Building Regulations Part O and provides an acceptable level of thermal comfort for future occupants.

Although internal blinds can further assist in managing solar gains and reducing overheating risk, it is important to note that they are not permitted for inclusion in official thermal modelling calculations under Part O guidance.

Important Note: The client must ensure that the final mitigation dataset—including window schedules, glazing specifications (g-values), and mechanical ventilation details—is verified and aligned with the data submitted for SAP and EPC compliance purposes.

10. Completion Details

Both the builder and the building control body inspector should complete this section to verify the completion details of the as-built residential building.

Builder's declaration		
Has the residential building been constructed and completed according to the specifications set out in Parts 1 and 2 of this checklist?	Yes	No
Builder's name		
Builder's organisation		
Builder's signature		
Date of signature		
Building control body inspector's declaration		
Is the residential building's construction consistent with the details provided in Parts 1 and 2 of this checklist?	Yes	No
Inspector's name		
Inspector's signature		
Registration number (if applicable)		
Date of inspection		

11. Regulation 40B: Providing Information to the Resident

When a new residential building is erected, information about the building must be given to the owner of the building (usually within the home user guide) to allow them to use the overheating mitigation strategy effectively.

Section 4 of Approved Document O requires that sufficient information about the overheating mitigation strategy and any associated maintenance requirements must be given to the owners so that it can be operated effectively when occupied. The guidance states that this should be included in a Section titled, 'Staying Cool in Hot Weather' in the Home User Guide.

A non- complicated, naturally ventilation led overheating mitigation strategy is proposed for this new home. Limited usage strategy information is therefore required for the future homeowner.

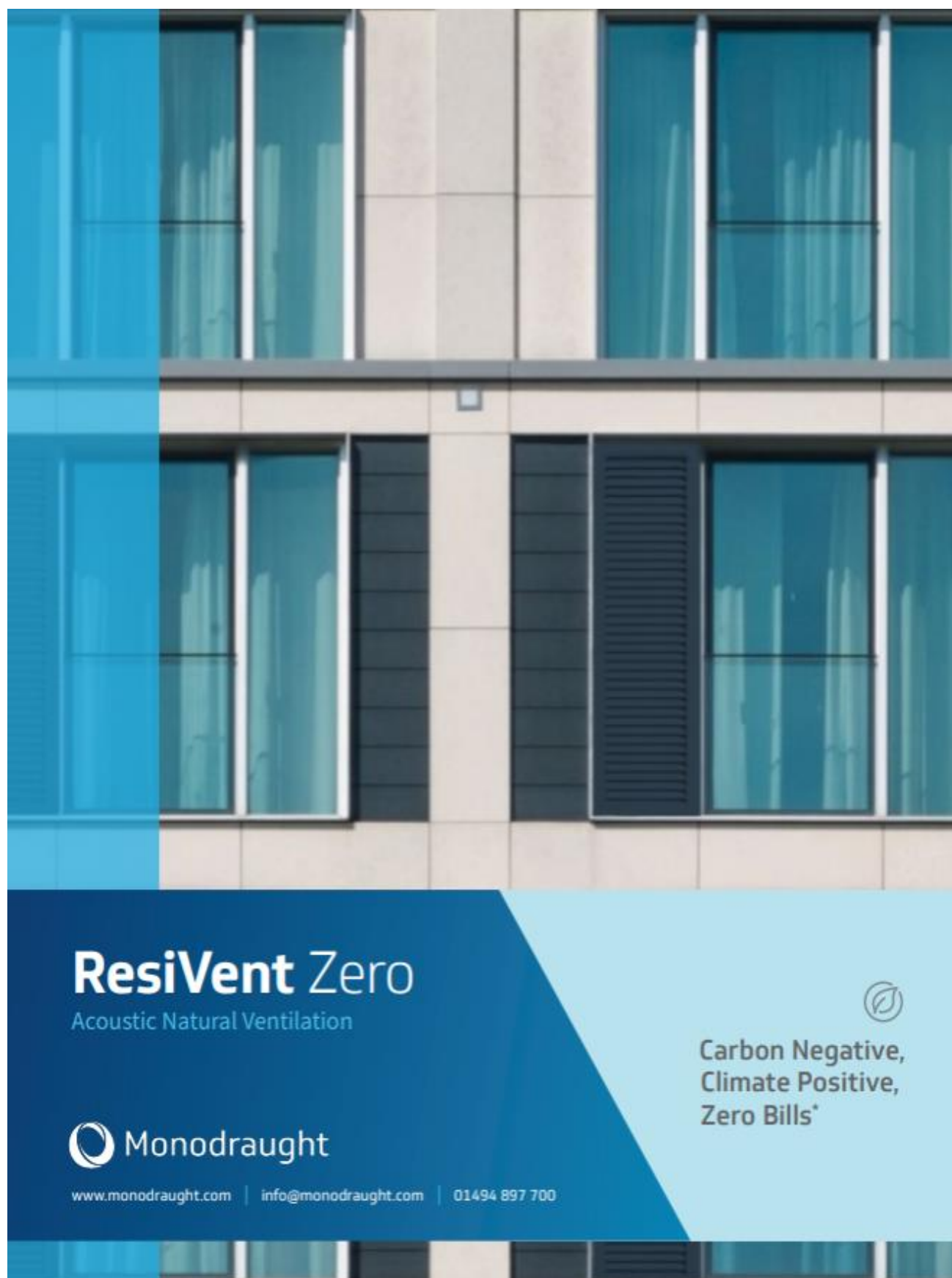
Regulation
Information about overheating 40B. 1. This regulation applies to building work in respect of a building where Part O of Schedule 1 applies. 2. The person carrying out the work must, not later than five days after the work has been completed, give sufficient information to the owner about the provision made in accordance with Part O so that the systems in place further to Part O can be operated in such a manner as to protect against overheating.

APPENDIX A – TM59 Gain Profiles

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	Peak load of 450 W from 6 pm to 8 pm*
	2 people at 100% gains from 8 am to 11 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	Peak load of 80 W from 8 am to 11 pm
	2 people at full gains from 8 am to 9 am and from 10 pm to 11 pm	Base load of 10 W during the sleeping hours
	1 person at full gains in the bedroom from 9 am to 10 pm	
Single bedroom (too small to accommodate double bed)	1 person at 70% gains from 11 pm to 8 am	Peak load of 80 W from 8 am to 11 pm
	1 person at full gains 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

APPENDIX B – Resi-Vent Zero (Product Catalogue)

The image shows the cover of a product catalogue for 'ResiVent Zero'. The top half features a photograph of a modern building facade with large windows and a blue vertical overlay on the left. The bottom half is a dark blue banner with white and light blue text. The text includes the product name 'ResiVent Zero', the tagline 'Acoustic Natural Ventilation', the company logo 'Monodraught', and contact information. On the right side of the banner, there is a circular icon with a leaf and the text 'Carbon Negative, Climate Positive, Zero Bills*'.

ResiVent Zero
Acoustic Natural Ventilation

 **Monodraught**

www.monodraught.com | info@monodraught.com | 01494 897 700

 Carbon Negative,
Climate Positive,
Zero Bills*

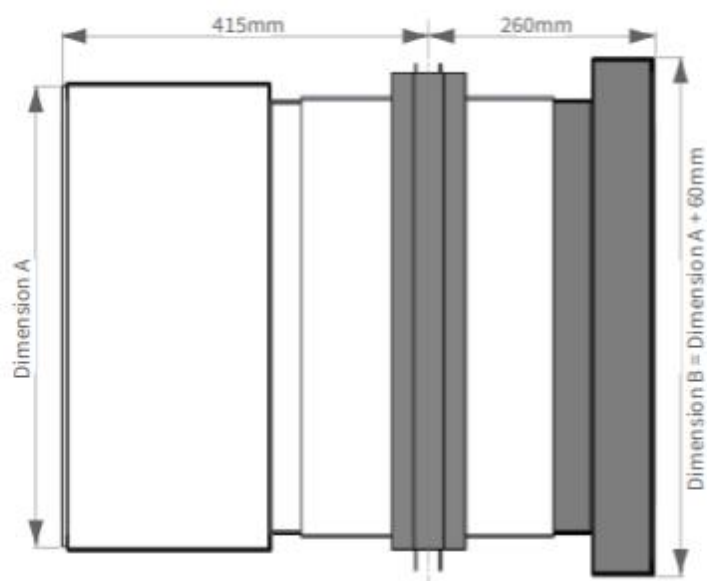
Product Specifications

ResiVent Zero

Item		Value
Model reference		RV-GL-WD
Dimensions (mm)	Height	Varies according to project specific requirements
	Width	Varies according to project specific requirements
	Depth	225 greater than Acoustic Attenuation Module (AAM)
Weight (kg)		100kg per m ² of ventilation face area
External finish		PPC - Powder coating – Project specific RAL colour to be confirmed prior to order placement
External weather louvre		50mm deep aluminium louvre fitted with anti-bird mesh grille
Weather protection rating		Class A
Internal louvre		Horizontal aluminium linear grille
Internal finish		PPC - Powder coating – White RAL 9003
Acoustic attenuation		Weighted Sound Reduction Rw 19dB to 36 dB
Thermal performance		1.1 W/m ² K
Airtightness (volume control damper locked closed)		2m ³ /hr/m ² at 50 Pa
Ventilation free area		Minimum of 38% physical free area
Warranty		10 Years

Dimensions

Drawing details for 450mm deep Acoustic Attenuation Module (AAM)



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