Overheating Study

CIBSE TM59:2017

Plot 13, East Street, Rusper, RH12 4RE

Revision 01 – 30th September 2026

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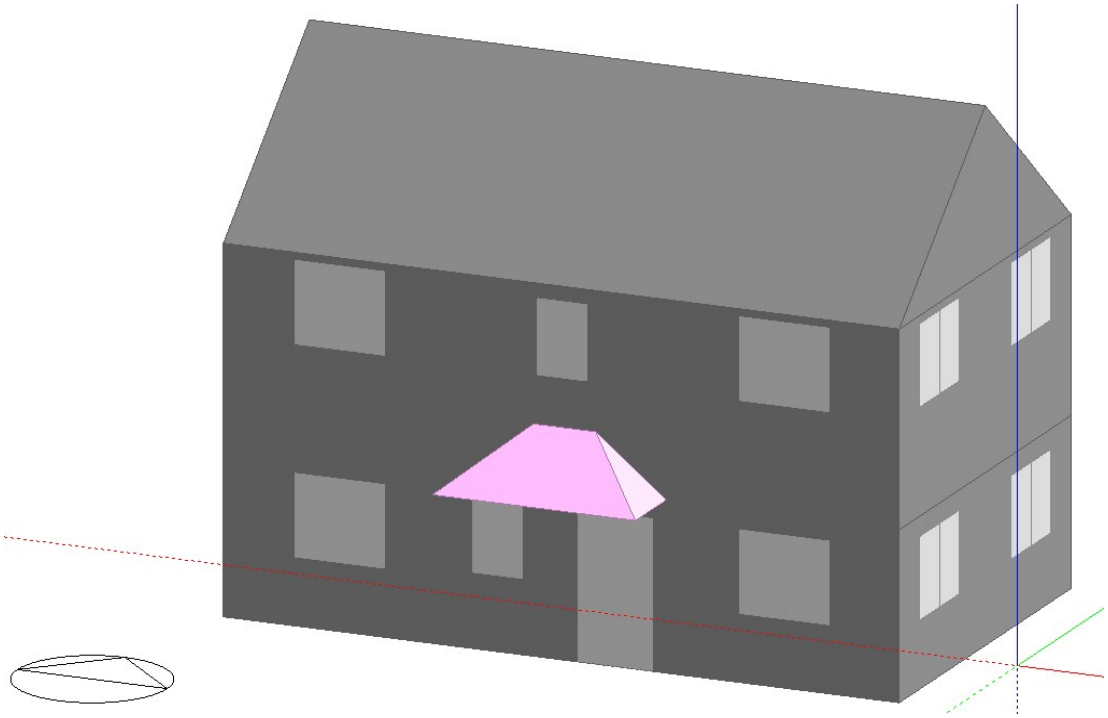
1.0 DSM Model



The building has been modelled using Design Builder Dynamic Simulation Modelling Software, using the Energy Plus Simulation Engine.

The DSM model can be used to provide:

- Overheating analysis (this report)
- Energy consumption prediction
- Heating and Cooling Load prediction
- Thermal Fluid Dynamics Assessment
- Building Compliance Assessment (Building Regulations Part-L and EPC)

Classification of Overheating

TM59 provides two criteria for assessing comfort and overheating in predominantly naturally ventilated buildings:

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 is greater than or equal to one degree (K) during the period 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 guarantee 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).

2.0 Specification for Model

The following information has been used to produce the building model:

Drawing Pack	250009-VA-P## - WD Pack
Weather Data	CIBSE DSY1 - London Gatwick
HVAC	ASHP
Lighting	TM59 default lighting
Infiltration Rate	0.7 ACH
Window Properties	U= 1.2, G= 0.63 (0.50G for Kitchen)
Wall U-value	0.17 W/m².K
Floor U-value	0.11 W/m².K
Roof U-value	0.17 W/m².K

Ventilation Strategy

Natural (purge) ventilation is provided by opening windows. The windows are simulated to be opened when a room is occupied and the operative temperature in the room is above 22°C.

Where external noise limits window opening at night, the assessment reflects the maximum permissible opening extent defined by the accompanying Noise Assessment by Acoustic South East (Issue 1, dated 28th January 2026.

Air infiltration through other openings, vents and cracks in the building structure is simulated and included in the natural ventilation rate.

Internal Conditions

Defined by dynamic simulation model as per TM59:2017, Section 6, Table 2:

Adjacent Buildings

Adjacent buildings have been modelled and included in the assessment.

3.0 Current Building Design

Table of TM59 results by zone

Floor	Zone	Criterion A (%)	Criterion B (hr)	Pass/Fail
FF	BEDROOM1	0.51	14.5	Pass
FF	BEDROOM2	0.9	7.5	Pass
FF	BEDROOM3	0.7	17.5	Pass
GF	KITXDIN	1.92	N/A	Pass
GF	LIVING	2.12	N/A	Pass

Table 1: ***Simulation results of model measured against TM59 criteria in applicable areas.***

4.0 Conclusion

The development has been assessed using the TM59 methodology outlined by CIBSE. The results indicated no significant risk of overheating in any of the applicable areas based on the current design specification, indicating compliance with part O. Table 1 above gives details on compliance in individual zones.