Overheating risk in dwellings: overheating compliance checklist

CIBSE TM59: 2026

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1. Intention of this supplementary guidance

This supplementary guidance provides a checklist of common errors and oversights made when undertaking TM59 assessments as an aid for robust QA processes.

Some of the modelling assumptions to be made when testing compliance with the domestic building regulations in England, Scotland and Wales (HMG, 2021; TSG, 2026; TWG, 2022) may differ from those prescribed in Technical Memorandum 59 (CIBSE, 2026a). The checklist also outlines some of these key differences.

This guidance will be updated periodically to maintain coherence between the evolving experience of using TM59 and any changes to national guidance.

2. QA points for TM59 models generally

- Check the occupied hours modelled for all spaces as this helps to indicate whether heat gain profiles have been correctly applied. Summer occupied hours should total 3672 for bedrooms and 1989 for living rooms, kitchens and studies.
- Confirm that the north angle is set correctly for the site, especially if it shows directly up (default) on drawings. Google Maps (satellite view) is very helpful for this. This should be checked prior to the sample selection as solar angles are significant within this selection.
- Check that the internal volume of each space is correctly modelled. Common errors are misrepresenting wall and ceiling/floor thicknesses or floor-to-floor heights. Different modelling tools use different approaches so consult helpfiles if needed. A spot check of the model calculated floor area and volume against plan values for specific spaces is recommended.
- Check that the correct exposure types are assigned to all openings, based on software guidance; e.g. windows onto internal courtyards should normally be assigned as 'sheltered'.
- Check that the g-values provided within the glazing specification are centre-pane values and not whole-window ones (or model appropriately). It is increasingly common for whole-window values to be quoted, which include the impact of frames and are therefore always lower than the centre-pane values. Modellers must be confident that the glazing specification has been accurately represented.
- Check that modelled constructions reflect proposed build-ups and thermal mass levels – especially if utilising the National Calculation Methodology (NCM) Construction Database.
- Confirm that all heat losses from any circulating community heating/domestic hot water (DHW) pipework and heat interface units (HIUs) or cylinders are assessed and included in the model in the correct spaces.
- Check that infiltration is not overestimated in the model and has been set to zero for new-build homes.
- Confirm that the correct CIBSE DSY1 weather file (location, weather year and emissions/percentile) has been used for the analysis. Please refer to section 3.1: *Weather Files* within TM59 (CIBSE, 2026a) and the latest supplementary guidance, *Overheating risk in dwellings: weather file requirements* (CIBSE, 2026b).
- Check that the cooling load results for all modelled spaces is zero (unless mechanical cooling is specified). Some profiles include cooling set points by default, which can lead to inadvertent cooling being applied within the model and incorrect results.
- Where cooling is proposed, check that peak cooling loads used by the model do not exceed the cooling capacity proposed for each unit.

- Check that the correct category of dwelling has been used within the assessment: Category I for dwellings with a high environmental expectation (i.e. dwellings likely to be occupied by highly sensitive people: the sick, disabled, elderly or very young), and Category II for normal expectation.
- Check that advice has been included on applying any required mitigation measures to the rest of the site outside of the sample of dwellings assessed.

3. QA points for when TM59 is being used for compliance

- Check that no blinds have been included within the window specification (unless they are external, interstitial or fixed internal shutters).
- Ensure that shading from trees is not included in the model.
- Check that all easily accessible bedroom windows are addressed for security or closed at night within the model. This applies to any ground floor bedrooms or bedrooms over flat roofs, garages or solid porches/shading devices. Modellers have a useful role in flagging any bedroom windows that might be affected by this requirement and ensuring the modelling correctly represents them.
- Confirm that the window opening proportions/discharge coefficient applied in the model for each window type reflect the proposed dimensions and include for the maximum reach of the window handle 650 mm from the inside face of walls (for outward opening windows). The Future Homes Hub spreadsheet is a useful tool for evaluating this (FHH, 2024).
- Check that windows on upper floors have guarding that meets the relevant statutory guidance. Modellers have a useful role in flagging any windows that may not meet this requirement at an early design stage so they can be addressed pre-planning, and the correct openings can be included in the modelling.
- Check that the window operation given in statutory guidance is applied, i.e. bedroom windows open at night based on the internal temperature at 11 pm, and daytime window openings start to open at internal temperatures >22 °C and are only fully open >26 °C.
- Where night-time noise is likely to be an issue, bedroom windows are modelled as open during the day and constrained to the openings indicated by the acoustic report at night. If windows need to be closed during the day as well as at night for acoustic or other reasons, then the TM59 criteria for 'predominantly mechanically ventilated spaces' should be applied to those rooms.

4. Additional recommendations for modelling practitioners

- Ask before commencing on a project whether an acoustic survey has been completed. If one has and high noise levels have been identified to be an issue, check which windows/elevations are affected and how. In the case of developments in England, make reference to the specific night-time noise limits outlined in Approved Document O (HMG, 2021).
- Include in your scope: to give advice on any areas of non-compliance and suggest suitable mitigations, and to provide sufficient iterations to test potential mitigation measures to optimise the results.
- Where mechanical ventilation provides part of the proposed solution, ask for confirmation that the specification meets the internal noise criteria within building regulations and CIBSE guidance.
- Check with the client/designer that the proposed mitigation strategy does not conflict with other regulatory requirements.

References

CIBSE (2026a) *Overheating risk in dwellings: a design stage methodology* TM59 (2026) (London: Chartered Institution of Building Services Engineers)

CIBSE (2026b) *Overheating risk in dwellings: weather file requirements* TM59 (2026) (London: Chartered Institution of Building Services Engineers)

FHH (2024) *Part O Simplified Method Calculator* Excel spreadsheet (London: Future Homes Hub) (https://www.futurehomes.org.uk/library#Guidancetoolsandtemplates)

HMG (2021) *Overheating* Approved Document O (2021 edition – for use in England) (London: HM Government)

TSG (2026) *Building Standards Technical Handbook: Domestic* (version 1.0 March 2026) (Livingston: The Scottish Government, Building Standards Division)

TWG (2022) *Overheating* Approved Document O (2022 edition – for use in Wales) (Cardiff: The Welsh Government)