Consultation version: not statutory guidance

Approved Document [X] – Overheating

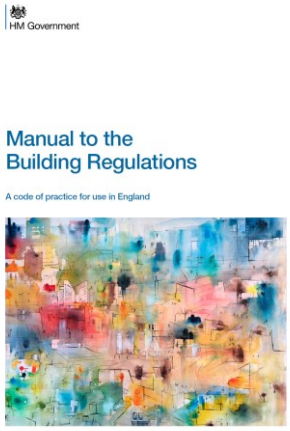
Consultation version – January 2021

This draft guidance accompanies the January 2021 consultation on the Future Buildings Standard: Consultation on changes to Part L (conservation of fuel and power) and Part F (ventilation) of the Building Regulations for non-domestic buildings and dwellings; and overheating in new residential buildings. *The Government is seeking views on the standards for work to residential buildings and the structure of the draft guidance.*

Background

How is construction regulated in England?

The Manual to the Building Regulations gives an overview of the building regulatory system in England. You can access the most recent version of the manual here.



How do you comply with the Building Regulations?

The Building Regulations are made under powers provided in the Building Act 1984. This applies in England and Wales. The majority of building projects are required to comply with them. They exist to ensure the health and safety of people in and around all types of buildings (i.e. domestic, commercial and industrial). They also provide for energy conservation, and access to and use of buildings.

The following is a high-level summary of the Building Regulations relevant to most types of building work. Where there is any doubt you should consult the full text of the regulations, available at www.legislation.gov.uk.

Building work

Building work is a legal term used to define the scope of the Building Regulations. For further information, see Volume 1 and paragraph A14 in Volume 2 of the **Manual to the Building Regulations.**

Material change of use

Building Regulations often apply when you change the use of a building, when it is a material change of use. This is discussed in paragraphs A14, A20 and Table A2 in Volume 2 of the **Manual to the Building Regulations.**

Materials and workmanship

Regulation 7 of the Building Regulations place requirements on materials and workmanship. Chapter 7 in Volume 1 and paragraphs F8 – F11 in Volume 2 of the **Manual to the Building Regulations** provides a summary of how to meet the regulations.

Independent third-party certification and accreditation

For information about Competent Persons Schemes, see Chapter 5 in Volume 1 and Chapter C in Volume 2 of the **Manual to the Building Regulations.**

Notification of work

It is commonly necessary to notify a building control service of the work that you are to undertake. For further information on when to notify a building control service, see Chapter B in Volume 2 of the **Manual to the Building Regulations.**

Responsibility for compliance

Those responsible for carrying out building work (for example agents, designers, builders, installers and the building owner), must ensure that the work complies with all of the relevant requirements of the Building Regulations. For further information on this topic, see Chapter 7 in Volume 1 and paragraphs A26, B2 and F2 Volume 2 of the **Manual to the Building Regulations.**

How to use an approved document

The approved documents provide guidance to help you satisfy the Building Regulations in many common situations. Following the guidance in the approved documents does not guarantee compliance. It is important to understand, when carrying out building work, the need to meet all of the relevant requirements of the Building Regulations. For further information see Chapter 1 and Chapter 7 in Volume 1 and Chapter F in Volume 2 of the Manual to the Building Regulations.

User requirements

The approved documents provide technical guidance. Users of the approved documents should have adequate knowledge and skills to understand and apply the guidance correctly to the building work being undertaken. Users should also understand that following the approved documents does not guarantee compliance with the Building Regulations.

Contents

Section 0: Introduction

Summary

0.1 This approved document is **Approved Document [X]: Overheating**. It gives guidance on how to comply with Part [X] of the Building Regulations.

0.2 This Approved document contains the following sections.

Approved Document Section	Related Building Regulations requirements
Section 0: Introduction	N/A
Section 1: Simplified method	[Requirement [X] in Schedule 1 of the Building Regulations]
Section 2: Dynamic thermal analysis	
Section 3: Ensuring the overheating strategy is usable	[Requirement [X] in Schedule 1 of the Building Regulations]
Section 4: Providing information	[the regulation for providing information about the overheating reduction strategy]
Appendix A: Key terms	N/A
Appendix B: Compliance checklist	N/A
Appendix C: Standards referred to	N/A
Appendix D: Documents referred to	N/A

Application

0.3 The guidance in this Approved Document [X] applies to new residential buildings only. Residential buildings in scope of Part [X] and this Approved Document are detailed in Table 0.1.

Table 0.1 Residential buildings in scope of this Approved Document

Title	Purpose for which the building is intended to be used
Residential (dwellings)	Dwellings, which includes both dwellinghouses and flats.
Residential (institutional)	Home, school or other similar establishment, where people sleep on the premises. The building may be living accommodation for care or maintenance of any of the following: a. Older and disabled people, due to illness or other physical or mental condition. b. People under the age of 5 years.
Residential (other)	Residential college, halls of residence, living accommodation for children aged 5 years and older.

Common areas in buildings with multiple dwellings

0.4 Common areas of buildings containing more than one residential unit fall within the scope of this approved document. For common areas, the guidance in this approved document should be followed.

Live-work units

0.5 A unit that contains both living accommodation and space for commercial purposes (e.g. as a workshop or office) should be treated as a residential building, as long as the commercial part can revert to domestic use.

0.6 The commercial part of a building can revert to residential use if all of the following apply.

a. There is direct access between the commercial space and the residential accommodation.

b. The commercial space and residential accommodation are within the same thermal envelope.

c. The living accommodation comprises a substantial proportion of the total area of the unit. What constitutes a 'substantial proportion' should be assessed on a case-by-case basis.

NOTE: A large non-residential building that contains a small flat for a manager is not treated as a residential building. A residential building that contains a room used as an

office or utility space is still treated as a residential building.

Mixed-use developments

0.7 This requirement applies only to the parts of a mixed-use building that are for residential purposes and any corridor that serves residential units.

Alternative approaches

0.8 Where you wish to follow an alternative approach to the guidance in the approved documents, you should discuss and agree it with a building control body before starting building work.

0.9 You must always meet the legal requirements of the Building Regulations, even if you decide to follow guidance other than that in the approved documents.

0.10 If alternative ways of mitigating overheating are adopted, the overall level of overheating risk reduction should not be lower than the approved document provides. It is the responsibility of those undertaking the work to demonstrate compliance.

Selected key interactions with other parts of the Building Regulations

The approved documents set out what in ordinary circumstances may be accepted as one way to comply with the Building Regulations. It remains the responsibility of those designing or undertaking building work to assess, on a case-by-case basis, whether specific circumstances require additional or alternative measures to achieve compliance with the regulatory requirements. There are interactions between many of the requirements of the Building Regulations, here is guidance on some key interactions.

Interaction with Part B

0.11 This Approved Document has guidance on window openings for removing excess heat. Approved Document B gives guidance on the size of escape windows. Where escape windows are provided for Approved Document B, any extra glazing will impact the risk of overheating.

Interaction with Part F

0.12 This approved document includes guidance on providing means of ventilation for removing excess heat from residential buildings. The amount of ventilation for removing excess heat will likely be higher than the purge ventilation required for Part F. The higher amount of ventilation applies, see section 1 or 2 dependent on your preferred method of compliance.

Interaction with Part J

0.13 Ventilation fans might cause combustion gases to spill from open-flued appliances – combustion gases might fill the room instead of going up the flue or chimney. This can occur even if the combustion appliance and fan are in different rooms.

0.14 The guidance in Approved Document J should be followed when installing and testing ventilation appliances and combustion appliances must operate safely whether or not fans are running.

Interaction with Part L

0.15 Solar gains in winter can reduce the amount of space heating required to be delivered by the heating system. Reducing summer overheating by limiting glazing areas will impact winter solar gains and therefore increase the need for space heating.

0.16 Poorly insulated pipework, particularly in community heating schemes, can be a major contributor to overheating. Heat losses from pipework are controlled through Part L of the Building Regulations and the guidance in Approved Document L should be followed.

Interaction with Part K and M

0.17 Where controls are provided, they should be within reasonable reach of the occupants, guidance is provided in Approved Documents K and M.

Interaction with Part K

0.18 This Approved Document has guidance on increased levels of security in some circumstances, compared to Part K. The higher standard applies, see section 3.

0.19 This Approved Document has guidance on increased levels of protection from falling from openings compared to Part K. The higher standard applies, see section 3.

Interaction with Part Q

0.20 This Approved Document has guidance on security considerations when providing large openings for removing excess heat. The locking systems of windows and doors should also conform to guidance given in Approved Document Q on the security of doors and windows in dwellings.

Requirement [for overheating (1)]:

This approved document deals with the following [requirement for overheating].

Requirement **[requirements will be drafted in line with the performance sections below]**	
Requirement	*Limits on application*

Intention

The aim of the [requirement for overheating (1)] is to protect the health and welfare of occupants of the building by reducing the occurrence of high indoor temperatures.

In the Secretary of State's view the [requirement for overheating (1)] is met by designing and constructing the building to achieve both of the following.

a. Limiting unwanted solar gains in summer.
b. Providing an adequate means to remove excess heat from the indoor environment.

NOTE: The guidance and regulations are written for the purposes of protecting health and welfare. Following this guidance may not guarantee the comfort of building occupants.

In the Secretary of State's view, compliance with the [requirement for overheating (1)] can be demonstrated using either of the two following methods.

a. The simplified method for limiting solar gains and a means of removing excess heat, as set out in **Section 1**.
b. The dynamic thermal analysis method, as set out in **Section 2**.

Section 1: Simplified method

1.1 This section details a simplified method for demonstrating compliance with the [requirement for overheating (1)]. It is suitable for any buildings within the scope of the [requirement for overheating (1)].

NOTE: Appendix B of this Approved Document includes a compliance checklist. The designer may use this checklist to demonstrate compliance to building control bodies.

Categorising residential buildings (Simplified method)

1.2 For the simplified method, the strategy to reduce overheating risk should be selected using the location and type of new residential building, following paragraphs 1.3 to 1.5.

1.3 For the purposes of following the simplified method, the country is split into two broad areas based on overheating risk. It should be determined where the building is located, from either of the following.

a. England, excluding Greater London (*moderate* risk of overheating)
b. Greater London (*significant* risk of overheating)

1.4 It should be determined what group the dwellinghouse or each residential unit, communal area and communal corridor belongs to, from either of the following.

a. Group A, that have both of the following characteristics.
    i. More than two fabric elements
    ii. Openings on opposite facades, allowing for cross ventilation.

    NOTE: Most dwellinghouses are within group A.

b. Group B, that have both of the following characteristics.
    i. Two or fewer fabric elements
    ii. Openings on facades which are not opposite.

    NOTE: Group B generally includes flats and residential units in care homes or student hall of residences. Group B also generally includes common areas in buildings that contain flats and residential units such as communal corridors, stairwells and shared living spaces.

NOTE: a whole multi-occupancy residential building should not be categorised into group A or B. Each residential unit, communal area or corridor should be categorised.

1.5 The building's location and category should be used to select the relevant guidance for both of the following.

a. Limiting unwanted solar gains in summer, follow paragraphs 1.6 to 1.9.
b. Providing an appropriate means to remove excess heat from the indoor environment, follow paragraphs 1.10 to 1.13.

Minimising solar gains (Simplified method)

1.6 Group A buildings or parts of buildings should meet the maximum glazing area and shading standards in Table 1.1.

Table 1.1 Minimising solar gains for Group A

Location	Maximum glazing area	Shading
England, excluding Greater London	21% of the floor area	-
Greater London	13% of the floor area	Shading on glazing between NE and NW (via south), following paragraph 1.9.

1.7 Group B buildings or parts of buildings should meet the maximum glazing area and shading standards in Table 1.2.

Table 1.2 Minimising solar gains for Group B

Location	Maximum glazing area	Shading
England, excluding Greater London	21% of the floor area	-
Greater London	15% of the floor area	Shading on glazing between NE and NW (via south), following paragraph 1.9.

1.8 Glazing should be distributed so that either of the following applies.

a. It is evenly distributed across all facades.
b. There is more glazing on the north and east facades.

1.9 Where shading is required by 1.6 or 1.7, it should be provided using one of the following.

a. External shutters with means of ventilation
b. Glazing with a maximum g-value of 0.4 and a high light transmittance of 0.7
c. Overhangs with 50° altitude cut-off on due south-facing facades only.

Removing excess heat (Simplified method)

1.10 Group A buildings or parts of buildings should have a minimum free area of one of the following.

a. 12% of the floor area, If the glazing area is less than 13% of the floor area
b. Equal to the glazing area, If the glazing area is more than 13% of the floor area.

1.11 Group B buildings or parts of buildings should have a minimum free area of the larger of the following.

a. 12% of the floor area
b. The glazing area.

1.12 The openings should be designed to open to a minimum of 60 degrees. If openings do not open to 60 degrees, further openings should be provided to achieve the same effective area as openings with the minimum free areas in paragraphs 1.10 to 1.11 open to 60 degrees.

NOTE: It is likely that the minimum free area provided will be larger than the maximum glazing areas in Table 1.1 and 1.2 when the area of the openable part of the window frame is considered.

NOTE: A system for purge ventilation should be provided in each habitable room to demonstrate compliance with Part F of the Building Regulations. The guidance in Section 1 of **Approved Document F, Volume 1: Dwellings** provides minimum standards for purge ventilation. When following this simplified method, the guidance on free areas in 1.10-1.12 will usually exceed the free areas in Approved Document F.

1.13 If there are any pipes for communal heating or hot water in corridors, both of the following should apply.

a. The rate of excess heat removal required should take into account the maximum heat gain from the pipes.
b. The additional excess heat removal should be met through either or both of the following.
    i. Non-glazed openings
    ii. Mechanical ventilation.

Section 2: Dynamic thermal analysis

2.1. This section details a dynamic thermal analysis method for demonstrating compliance with [the regulation for overheating (1)]. It provides a standardised approach to predicting overheating risk for residential building designs using dynamic thermal analysis as an alternative to the simplified method in **Section 1**.

2.2. The methodology is suitable for all residential buildings, however it may offer the designer additional design flexibility over the solutions in **Section 1** in the following situations.

a. Residential buildings with very high levels of insulation and air-tightness.
b. Residential buildings with specific site conditions that mean the building is not well represented by the two locations in paragraphs 1.3, for example a city centre location that is not London.
c. Residential buildings that are highly shaded by neighbouring properties, structures or landscape.

Dynamic thermal analysis method

2.3. To demonstrate compliance using the dynamic thermal analysis method all of the following should be followed.

a. CIBSE's *TM59* methodology for predicting overheating risk.
b. The limits on the use of CIBSE's *TM59* methodology as set out in paragraphs 2.5 to 2.6.
c. The acceptable strategies for reducing overheating risk in paragraphs 2.7 to 2.11.

2.4. The building control body should be provided with a report that demonstrates that the residential building passes CIBSE's *TM59* assessment of overheating. This report should contain the details in section 2.3 of CIBSE's *TM59* - suggested reporting requirements**.**

NOTE: Appendix B of this Approved Document includes a compliance checklist. The designer may use this checklist to demonstrate compliance to building control bodies.

Limits on CIBSE TM59 modelling

2.5. CIBSE's *TM59* method contains choices for the modeller to make. The dynamic thermal analysis method in this Section applies limits to these choices, which are detailed in

paragraphs 2.6 to 2.7. These limits should be applied when following CIBSE's *TM59* guidance.

NOTE: The limits are listed in the order that the guidance is provided in CIBSE's *TM59.*

2.6. Limit on CIBSE's *TM59***,** section 3.3, 'Windows and door openings' modelling should apply all of the following.

a. When a room is occupied in the day (8 am to 11 pm) openings should be modelled to do all of the following.
   i. Start to open when the internal temperature exceeds 22 °C.
   ii. Be fully open when the internal temperature exceeds 26 °C.
   iii. Start to close when the internal temperature falls below 26 °C.
   iv. Be fully closed when the internal temperature falls below 22 °C.

b. At night (11 pm to 8 am) openings should be modelled to be fully open if both of the following apply.
   i. The opening is on the first floor or above and not easily accessible.
   ii. The internal temperature exceeds 23 °C at 11 pm.

c. When a ground floor or easily accessible room is unoccupied in the day or night, windows, patio and balcony doors should be modelled as closed.

d. Include an external entrance door which should be shut all the time.

Acceptable strategies for reducing overheating risk

Limiting unwanted solar gains

2.7. Solar gains in summer should be limited through any of the following.

a. Fixed shading devices, for example:
   i) shutters
   ii) external blinds
   iii) overhangs
   iv) awnings.

b. Glazing design, for example:
   i) size
   ii) orientation
   iii) g-value
   iv) size of window reveal.

c. Building design, for example the placement of balconies.

d. Shade of adjacent permanent buildings, structures or landscape.

2.8. Internal blinds and curtains provide some reduction in solar gains, however should not be

accounted for when considering whether [the requirement for overheating (1)] has been met.

2.9. Plants, such as tree cover, can provide some reduction in solar gains, however should not be accounted for when considering whether [the requirement for overheating (1)] has been met.

NOTE: Examples of solar shading and their effectiveness are provided in The Building Research Establishment's *Solar shading of buildings.*

Removing excess heat

2.10. Excess heat from the residential building should be removed through any of the following.

a. Opening windows, made more effective by cross-ventilation.
b. Ventilation louvres in external walls.
c. A mechanical ventilation system.

2.11. The building should be constructed to meet [the requirement for overheating (1)] without the need for mechanical cooling (air-conditioning). However, mechanical cooling is not prohibited by the requirement.

NOTE: Any method to reduce overheating risk in homes must comply with all other parts of the Building Regulations. Particular note should be taken of the requirements of Part F and the guidance in **Approved Document F, volume 1: dwellings** for noise and maintenance.

NOTE: A system for purge ventilation should be provided in each habitable room to demonstrate compliance with Part F of the Building Regulations. The guidance in Section 1 of **Approved Document F, Volume 1: Dwellings** should be followed for the minimum standards for purge ventilation. A larger amount of purge ventilation may be required than that in **Approved Document F, Volume 1: Dwellings** in order to satisfy the [the requirement for overheating (1)] on providing an adequate means to remove excess heat from the indoor environment.

Requirement [for overheating (2)]:

This Approved Document deals with the following [requirement for overheating].

Requirement **[requirements will be drafted in line with the performance sections below]**	
Requirement	*Limits on application*

Intention

In the Secretary of State's view, the [requirement for overheating (2)] is met if the building's overheating strategy is usable by occupants by taking account of all of the following.

a. Noise at night – paragraphs 3.1 - 3.4.
b. Pollution – paragraphs 3.5.
c. Security – paragraphs 3.6 - 3.8.
d. Protection from falling – paragraphs 3.9 - 3.11.
e. Protection from entrapment – paragraph 3.12.

Section 3: Ensuring the overheating strategy is usable

Noise

3.1. When the removing excess heat part of the overheating strategy is in use, noise levels in bedrooms should be kept to a minimum during the sleeping hours of 23.00 – 07.00. Noise within bedrooms should not normally exceed the following limits.

a. When openings are used
   i. 40 dB $L_{Aeq, T}$, averaged over 8 hours.
   ii. 55 dB L_{AFmax}, maximum no more than 10 times a night.

b. When a mechanical system is used
   i. 30 dB $L_{Aeq, T}$, averaged over 8 hours.

3.2. Building control bodies may accept as evidence that this requirement is satisfied, any of the following.

a. Documentation to demonstrate that the local planning authority did not consider external noise to be an issue at the site at the planning stage.
b. Noise measurements of the indoor environment once the building is completed. Measurements should be taken in accordance with the Association of Noise Consultants' *Measurement of Sound Levels in Buildings* with the overheating mitigation strategy in use.
c. Modelling of the noise of the indoor environment, using appropriate external noise measurements, with the overheating mitigation strategy in use.

3.3. Where noise measurements are used, sample testing on a development is appropriate. The sample should include one of each dwelling design, facing each orientation. The dwellings to be sample tested should be selected by the building control body in consultation with the person carrying out the measurement.

3.4. Where external noise is identified as an issue at the planning stage either of the following measures could be followed.

a. Assess external noise and reduce the building's exposure.
b. Design the building to reduce the passage of noise from the external to the internal environment.

Guidance can be found in the Association of Noise Consultants' *Acoustics, ventilation and overheating residential design guide.*

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** and should be followed where practicable. Particular attention should be given to the guidance in **Approved Document F, Volume 1: Dwellings** in locations where the Air Quality Standards Regulation 2010 Schedule 2 limit values are exceeded.

Security

3.6. Where openings, such as windows, are used in the overheating mitigation strategy, they should be made secure in order to resist physical attack by a casual or opportunistic burglar during sleeping hours, in both of the following situations.

a. Ground floor bedrooms.
b. Easily accessible bedrooms.

3.7. Open windows or doors can be made secure by using either of the following.

a. Louvred shutters.
b. Window railings.

3.8. Louvered shutters and window railings should do both of the following.

a. Comply with Resistance Class 2 of **BS 1627: 2011.**
b. Have louvres or railings sufficiently close together to prevent people reaching through them.

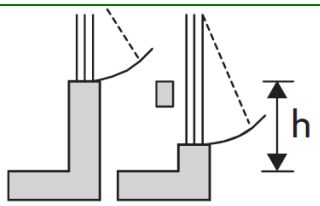
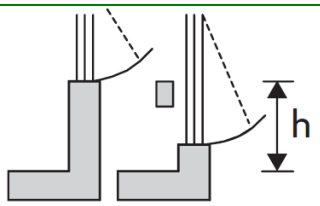
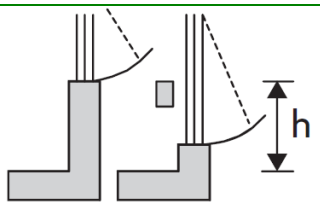
Protection from falling

3.9. Where openings, such as windows, are used in the overheating mitigation strategy, the risk of occupants falling from height should be mitigated. Openings wider than 100mm should comply with all of the following.

a. Window handles should not be more than 600 mm from the inside face of the wall, when the window is at its maximum openable angle.
b. Guarding should be installed to meet the minimum standards in Table 3.1.

NOTE: To ensure safe operation it may be necessary to reduce the size of the outward opening windows and provide more windows to meet the required free area.

Table 3.1 Guarding heights

Change in floor level between inside and outside	Room	Guarding height [1]
Less than 600mm	Any	See **Approved Document K**
More than 600mm, but less than 2000mm	Any	1.1 m 
More than 2000mm	Any, other than bedrooms	1.1 m 
	Bedroom	1.25 m 

Note:

1. This Approved Document has increased levels of protection from falling compared to **Approved Document K.** Where applicable, the higher standard applies.

3.10. Guarding for large openings could include, but is not limited to, either of the following.

a. Shutters with a child-proof lock.
b. Fixed guarding.

3.11. Guarding should be constructed to prevent children from readily being able to climb it. For example, horizontal rails should be avoided.

Protection from entrapment

3.12. Louvered shutters, window railings and ventilation grills 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 passage of an 8mm diameter rod should also allow 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.

Regulation [X]: Providing information

This approved document deals with the requirements of [the regulation for the information about the overheating reduction strategy]

[regulations will be written in line with the performance sections below]

Intention

When a new residential building is erected, information about the building must be given to the owner of the building to allow them to use the overheating reduction strategy effectively.

In the Secretary of State's view, [the regulation for the information about the overheating reduction strategy] is met by providing information in accordance with **Section 4.**

Section 4: Providing information

4.1 Sufficient information about the overheating strategy and its maintenance requirements must be given to owners so that it can be used effectively. The information should be provided in a clear manner, for a non-technical audience.

4.2 The following information should be provided where relevant.

a. The overall overheating risk reduction strategy. For example, appropriately sized windows that do not let in too much direct sun and therefore increase the internal temperature, but which open fully to allow cool air in. Or, roller shutters with ventilation louvres.
b. The location of each element of the overheating mitigation strategy.
c. Instructions to operate each element of the overheating mitigation strategy.
d. The time of day that different parts of the strategy should be used. For example, the shutters should be used in the day and the windows opened only when it is cooler outside.
e. The time of year the strategy should be used. For example, all summer from May to September or only in hot weather.
f. Manufacturer's contact details.
g. Location of controls and instructions for setting of controls e.g. timer controls.
h. The location of sensors and how to recalibrate them.
i. Cleaning and maintenance instructions.

Home User Guide

4.3 A Home User Guide should be provided for a new dwelling as described in **Approved Document L, Volume 1: Dwellings** (Section 9 – Providing Information). The Home User Guide should contain a section on 'Staying cool in hot weather', which provides non-technical advice on how to keep the dwelling cool in hot weather. The information in paragraph 5.2 should be provided in this section of the Home User Guide.

NOTE: Information about ventilation and the conservation of fuel and power is required under different Regulations and guidance is given in Approved Documents F (ventilation) and L (conservation of fuel and power). Where the system provides more than one function the owner should be informed of each.

Appendix A: Key Terms

The definitions below are for this document only, and are not intended to be rigorous.

Building Control Body is a local authority or an approved inspector.

Common areas are rooms and circulation spaces in buildings that contain more than one residential unit. Examples of these include, but are not limited to, corridors between dwellings and communal living rooms or kitchens.

Cross ventilation is the ability to ventilate using openings on opposite facades of a dwelling.

Easily accessible is either:

- A window or doorway, any part of which is within 2m vertically of an accessible level surface such as the ground or basement level, or an access boundary, or
- A window within 2m vertically of a flat or sloping roof (with a pitch of less than 30 degrees) that is within 3.5m of ground level.

Effective Area is the area through which air flows after the resistance of airflow has been accounted for.

Fabric element is a thermal element or a whole façade of glazing which is exposed to the outside air or ground.

Floor area is the total area of all enclosed spaces, measured to the internal face of the external walls. When calculating floor area, both:

a. the area of sloping surfaces such as staircases, galleries, raked auditoria and tiered terraces should be taken as their area on plan

b. areas that are not enclosed, such as open floors, covered ways and balconies, should be excluded.

NOTE: This area is the gross floor area as measured in accordance with the guidance issued to surveyors by the Royal Institution of Chartered Surveyors (RICS).

Free area is the geometric open area of a ventilator.

Glazing area is the area of transparent material, not including the window frame.

Guarding is a barrier that denies people access to another area, for example the floor below.

Habitable room is a room used for dwelling purposes but which is not solely a kitchen, utility room, bathroom, cellar or sanitary accommodation.

Louvre is a set of angled slats that allow air or light to pass through.

Purge ventilation is ventilation of rooms or spaces at a relatively high rate to rapidly remove excess heat and dilute pollutants and/or water vapour.

Residential units are habitable rooms or a suite of habitable rooms. Examples of a residential unit include, but are not limited to, a flat or rooms that are similar to a flat in care homes or student halls of residence.

Thermal envelope is the combination of thermal elements and controlled fittings of a building which enclose a particular conditioned indoor space or groups of indoor spaces.

Ventilation is the supply and removal of air (by natural and/or mechanical means) to and from a space or spaces in a building. It normally comprises a combination of purpose-provided ventilation and infiltration.

Appendix B: Compliance Checklist

B.1 This compliance checklist is divided into three parts.

a. **Part 1** functions as building detail.
b. **Part 2** functions as a design checklist for either of the following.
    i. The Simplified Approach detailed in **Section 1**.
    ii. the Dynamic thermal analysis Approach detailed in **Section 2**.
c. **Part 3** is a visual inspection for the as-built residential building.

B.2 All three parts of the compliance checklist should be completed. The relevant parts of **Part 1** and **Part 2** should be signed by a person who is competent to design the residential building.

B.3 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 overheating risk.

Part 1 – Building details and declarations

The designer should complete this section

1.1 Building and Site Details	
Residential building name/number	
Street	
Town	
County	
Post Code	
Proposed building use/Type of building	
Are there any security, noise or pollution issues?	
1.2 Designer Details	
Designer's name	
Company	
Address Line 1	
Address Line 2	
Post Code	

Contact details	

Part 2 – Design details

The designer should complete either Checklist Part 2a or 2b depending on the method used.

Checklist Part 2a: The simplified Method as detailed in Section 1

2a.1 Site details	
Site Location, assigned using paragraphs 1.3	
Building category, assigned using paragraphs 1.4	
2a.2 Designed Overheating Strategy	
Detail the strategy for minimising solar gains.	
Detail the strategy for removing excess heat	
2a.3 Designer's declaration	
Designer's signature	
Registration number (if applicable)	
Date of design	

Checklist Part 2b: Dynamic thermal analysis method as detailed in Section 2

2b.1 Modelling details		
Dynamic software name and version		
Weather file location used, including any additional more extreme weather files.		
Number of sample units modelled, including an explanation of why the size/selection has been chosen.		
2b.3 Modelled Overheating Strategy		
*Has the building been modelled in-line with **CIBSE TM59**, including limits detailed in paragraphs 2.4 to 2.6?*	**Yes**	**No**
Detail the occupancy profiles used.		
Detail the equipment profiles used.		
Detail the opening profiles used.		
Ventilation strategy		
Free areas		
Infiltration and mechanical flow rates		

Window g-value			
Shading strategy			
2b.4 Modelling results			
*Has the project passed the assessment described in **CIBSE TM59**, including limits in **Section 2** of this Approved Document?*		**Yes**	**No**
What is the overall overheating strategy? (i.e. what design features does the pass depends on?)			
2b.5 Designer's declaration			
Has the building construction proposal been modelled accurately?		**Yes**	**No**
Designer's name			
Designer's organisation			
Designer's signature			
Registration number (if applicable)			
Date of design			

Part 3 – Completion details

The developer and the building control body inspector should complete this section.

3.1 Builder's declaration			
This declaration by the builder is confirmation that that the residential building has been constructed and completed according to the specifications set out above in Part 1 and 2.		**Yes**	**No**
Builder's name			
Builder's organisation			
Builder's signature			
Date of signature			
3.2 Building control body declaration			
*Has the building been built consistent with the details provided in **Part 1** and **2** of this checklist?*		**Yes**	**No**
Inspector's name			
Inspector's signature			
Registration Number (if applicable)			
Date of inspection			

Appendix C: Standards referred to

BS 1627: 2011

Pedestrian doorsets, windows, curtain walling, grilles and shutters. Burglar resistance. Requirements and classifications.

Appendix D: Documents referred to

Legislation

The Air Quality Standards Regulation SI 2010/1001.

The Building Regulations 2010 SI 2010/2214

Documents

Association of Noise Consultants & Institute of Acoustics (2020)

Acoustics, ventilation and overheating residential design guide.
Available online at:

https://www.association-of-noise-consultants.co.uk/wp-content/uploads/2019/12/ANC-AVO Residential-Design-Guide-January-2020-v-1.1.pdf.

Building Research Establishment

BR364 *Solar shading of buildings, Second edition*. (2018)

Chartered Institute of Building Services Engineers

TM59 *Design methodology for the assessment of overheating risk in homes.* (2017)

Ministry of Housing, Communities and Local Government

Approved Document F, Volume 1: Dwellings. [to be updated at implementation stage]

Approved Document L, Volume 1: Dwellings. [to be updated at implementation stage]

Index

*[**Note for consultation:** The index will be provided at implementation stage]*