

Complying with the 2022 Updates to Building Regulations on Windows and Doors



With Mark Nolan
Business Development Manager



An Introduction to Bereco

- Beautifully bespoke timber windows & doors.
- Established in 2003.
- 260,000+ timber windows & doors supplied to date.
- 18,474m³ of FSC®100% certified timber used.
- Over 66 million kg CO₂e saved compared to equivalent uPVC products.
- 261 acres of endangered rainforest saved to date through our partnership with World Land Trust.
- 98% of our customers would recommend us. (FY22)



Learning Aims

- Gain an understanding of the Future Homes & Building Standards (FHS).
- Develop an understanding of the changes to Part F in respect of windows and doors.
- Develop an understanding of the changes to Part L in respect of windows and doors.
- Develop an understanding of the new Part O in respect of windows and doors.
- Compliance with the new 2022 standards.





The Future Home & Building Standards

Exploring its purpose, and implementation

Why is the Future Homes & Building Standards (FHS) being introduced?

- The built environment accounts for 40% of UK greenhouse gases, 14% of which comes from the 28 million homes in the UK.
- The aim is to reduce carbon emissions on new build homes by 75–80% when compared to current regulations.
- Make new build homes zero-carbon ready by 2025.
- Ultimately help UK move towards Net Carbon Zero by 2050.



The FHS' Four Phase Approach

Phase 1 – Changes to Key Building Regulations

(June 2022)

- Revision of both Part F & L.
- Introduction of Part O.

Phase 2 – Technical Work and Analysis

(Autumn 2021- Summer 2024)

- Research and analysis phase to develop FHS technical specification.
- Develop specific guidance and embed understanding of technical specification of FHS.

Phase 3 – Consultation Phase

(Spring 2024)

- Technical consultation and final proposal of FHS.

Phase 4 – Full FHS Implementation

(Autumn 2024)



The FHS Phase 1 – Build Type Compliance

The FHS targets both new and existing homes, with the target of making new build homes future proof whilst improving the energy efficiency of existing homes.

New build homes must comply with all three regulations, existing homes are exempt from Part O.

Approved Document	New Build Homes	Existing Homes
Part F	Must Comply	Must Comply
Part L	Must Comply	Must Comply
Part O	Must Comply	Exempt



The FHS Phase 1 – Key Documents & Dates.

- Revision of Approved Document Part F – Ventilation.
- Revision of Approved Document Part L – Conservation of Fuel & Power.
- Introduction of Approved Document Part O – Overheating (new build homes only).

When will new build and existing homes need to comply?

	Either full plans or building notice submitted before 15 th June 2022	Full plans or building notice submitted after 15 th June 2022	Existing homes without planning application or building notice submitted
Works started before 15 th June 2023*	Exempt	MUST COMPLY	MUST COMPLY
Works started after 15 th June 2023	MUST COMPLY	MUST COMPLY	MUST COMPLY

** Applies only after 15th June 2022*



Approved Document F

Ventilation

What is Approved Document F?

The primary aim of Part F is to improve air quality and occupants health through the means of both background and purge ventilation. Improving a building's ventilation will help reduce:

- Moisture increasing the risk of condensation and mould growth.
- Carbon monoxide.
- Allergens (dust mites).
- Odours.
- Carbon Dioxide.

The key is to create a balance between all three regulations:

- Creating a ventilation system for good air quality (Part F).
- Keeping the building energy efficient by increasing air tightness (Part L)
- Creating a comfortable temperature to prevent overheating (Part O).



The Building Regulations 2010

Ventilation

APPROVED DOCUMENT

F

Volume 1: Dwellings

Requirement F1: Means of ventilation

Regulations: 39, 42 and 44

2021 edition – for use in England

Key Changes to Part F in 2022

- The room equivalent area mm² or EA rating has been increased on both habitable & non-habitable rooms (*see below table*).
- The overall dwelling EA model has been replaced with a room-by-room model.
- Trickle vents are required to new build and existing homes.

Room	2010 Regulations	New 2022 Regulations - Homes with multiple floors	New 2022 Regulations - Homes with single floors
Habitable rooms	5000mm ²	8000mm ²	10000mm ²
Kitchen	2500mm ²	8000mm ²	10000mm ²
Utility room	2500mm ²	No minimum	No minimum
Bathroom	2500mm ²	4000mm ²	4000mm ²
Sanitary Accommodation (i.e. W/C)	No minimum	No minimum	No minimum

Part F – Means of Ventilation

Trickle vents are deemed as the preferred choice of ventilation for most developers, architects and homeowners as they carry many benefits:

- Flexible in design.
- Cost effective.
- Natural source of ventilation.
- Ease of use.
- Better security.

Within the newly revised Part F there are some considerations to be taken into account when designing any residential project:

- Open plan living (living room/kitchen) need a minimum of 3 trickle vents.
- A minimum of 5 trickle vents must be fitted in any property.
- Night latch facilities will NOT meet the new Approved Document F regulations.



Part F – Means of Ventilation Cont...

Despite trickle vents being the preferred choice of ventilation, there are some scenarios within Part F where ventilation is not required:

- If a dedicated mechanical ventilation system is present.
- If airbricks are used for ventilation.
- If a home has a minimum of 70% of its windows or doors on the same external wall.
- If equal to or less than 30% of the total existing windows and doors are being replaced and no other major works are done (*see Approved Document F, Section 3*).
- If a property is listed or in a conservation area (*always consult your conservation and building control officer*).





Approved Document L

Conservation of Fuel and Power

What is Approved Document L?

The purpose of Part L1A & Part L1B is to increase standards for energy performance, reducing carbon emissions for new and existing dwellings.

- Approved Document L1A – New Dwellings.
- Approved Document L1B – Existing Dwellings.

The main focus is on new build dwellings and making them 'zero-carbon ready' from 2025.

The standards in Part L1B have been significantly improved for existing homes, the aim to make them more energy efficient. The goal is to drive existing homes towards an energy rating of C or above from 2025. This is going to be achieved primarily by raising the performance standards of home improvement products, such as new windows and doors from 2022.



The Building Regulations 2010

**Conservation of
fuel and power**

APPROVED DOCUMENT



Volume 1: Dwellings

Requirement L1: Conservation of fuel and power

Requirement L2: On-site generation of electricity

Regulations: 6, 22, 23, 24, 25, 25A, 25B, 26, 26A, 26C, 27, 27A, 27C, 28, 40, 40A, 43, 44 and 44ZA

2021 edition – for use in England

Key Changes to Part L in 2022

The main focus of Part L is increasing the energy efficiency of all elements in the building fabric; its core focus u values.

New Build Homes

Required window & door u-values for new build dwellings;

- Notional target - windows & doors $1.2 \text{ W/m}^2\text{K}$.
- Limiting standard - windows & doors $1.6 \text{ W/m}^2\text{K}$.

Existing Homes

Required window & door u-values for existing dwellings;

- Notional target - windows & doors $1.4 \text{ W/m}^2\text{K}$
- Limiting standard - windows & doors $1.4 \text{ W/m}^2\text{K}$.



U-Values - New Build vs Existing Homes

Earlier versions of the building regulations have always focused on new build homes having the 'better' energy efficiency and air tightness, however the new 2022 building regulations require products fitted in existing homes to be better performing than ever before. Here's why:

- Existing homes (23 million as at 2019) accounted for 16% of the country's total carbon emissions in 2019.
- The carbon emissions created in retrofitting an existing home are around 15% of those created in building a new home.
- 63% of an existing homes carbon emissions are created through space heating and cooling reducing this need is vital to saving carbon.
- Air leakage is a major cause of energy loss, typically around 20% in older homes; improving air tightness so spaces don't have to be heated is key.
- Focusing on easy to replace or install energy efficiency products (i.e. windows and doors, loft and cavity wall insulation) is the best way to improve an existing homes' air leakage and its overall energy performance.



Notional Targets vs Limiting Standards

Part L suggests elements such as wall material and windows should aim to achieve 'notional' targets to maximise a building's energy efficiency. However they also allow a minimum or 'limiting standard' to aid design flexibility and build costs.

Notional Targets

- Desired target rating (u-value) for the building product.
- Used only for new build projects.
- Help achieve whole building Target Fabric Energy Efficiency (TFEE) with ease.

Limiting Standards

- A minimum rating (u-value) for the building product.
- Used across all build types.
- When all u-values are input into a SAP10 model the building must achieve the Target Fabric Energy Efficiency (TFEE).



SAP10 Models

- Within AD L1A (new build homes) new energy performance calculations are required. The calculations are done via SAP10 calculation models.
- From 15th June SAP10 models will supersede the current SAP2012 models.
- SAP models are carried out for new dwellings and change of use, they are not used for existing homes.

What data do you need for SAP models?

- Building's window & door average U-value.
- Building's window & door average G-value.

All Bereco technical data is available from our Resource Centre www.berecoresourcecentre.co.uk





Approved Document O

Overheating

What is Approved Document O?

The aim of requirement O1 is to protect the health and welfare of occupants of domestic dwellings and residential like commercial properties such as care homes and student accommodation by reducing the occurrence of high indoor temperatures.

Part O Focuses on:

- (a) limiting unwanted solar gains in summer;
- (b) providing an adequate means to remove heat from the indoor environment.

Part O is for new build dwellings only.



Introducing the new Part O

Limiting Solar Gains through Part O

Approved Document O provides a list of ways to limit solar gain into a building:

- Shutters.
- External blinds.
- Overhangs.
- Glazing type and size (window sizes and G-values).

Removal of Excess Heat

Approved Document O provides a list of ways to remove excess heat from a building:

- Opening windows.
- Ventilation louvres.
- Mechanical ventilation systems.
- Mechanical cooling systems.



How to Comply with Part O

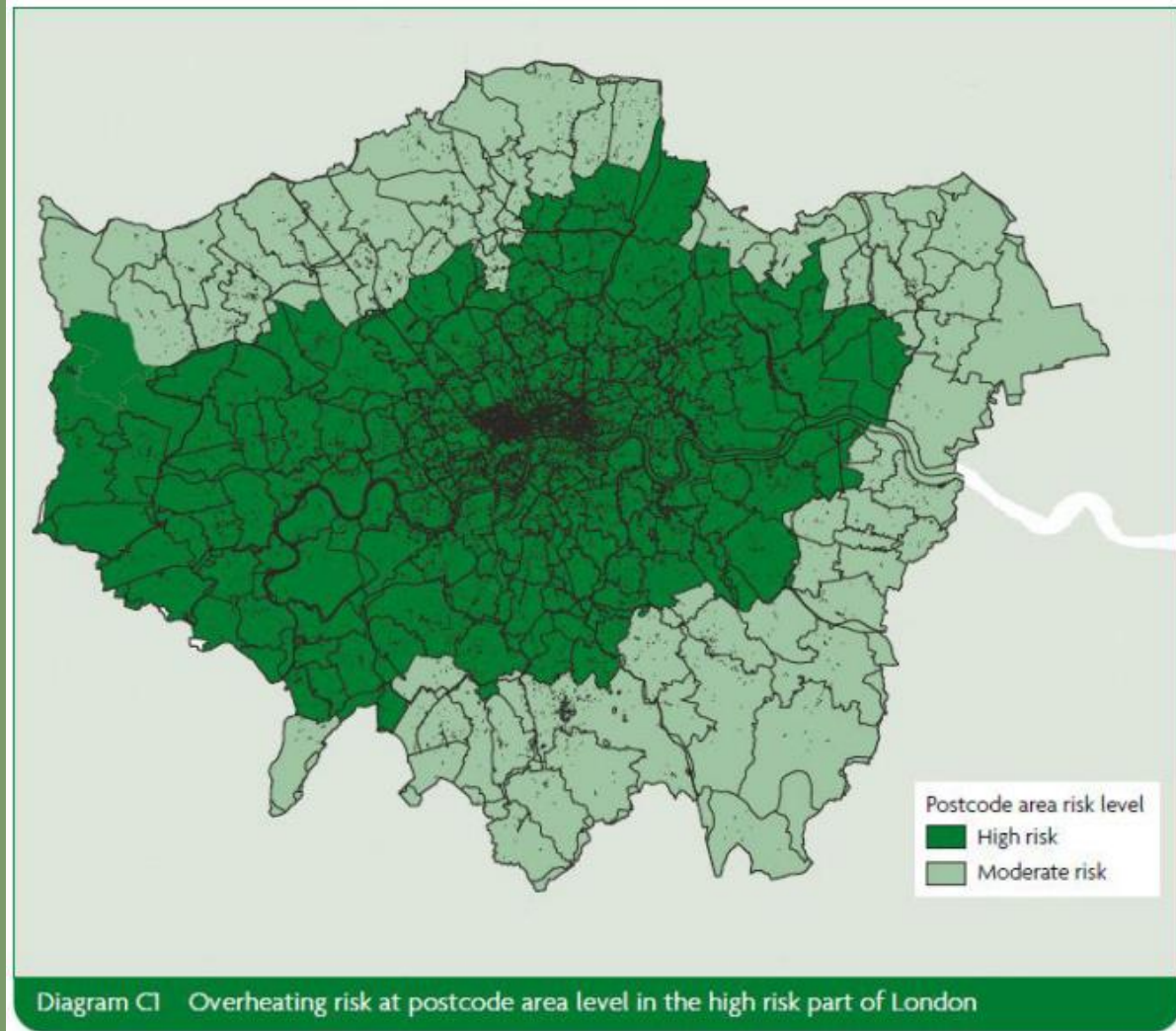
To comply with Part O there are two methods that can be utilised, the first one being:

- The simplified method (section 1 of Approved Document O)

The simplified method is based on:

1. Restricting maximum allowable window area, which limits a building's solar gains.
2. A minimum area of those windows that can be opened, both areas are percentages of the total floor area.

First a development's location must be determined as either high risk or moderate risk.



In addition to London, Central Manchester with the below postcodes should also follow guidance for higher risk locations:

Post Codes: M1, M2, M3, M5, M15, M16, M50

Simplified Method for Overheating Compliance Cont...

Then the development (or building) must be categorised as:

1. Cross-ventilation compliant – natural method of cooling via opening windows on opposite positions in the same area.
2. Not cross-ventilation compliant – only having opening windows on one elevation in the same area.

Next is the maximum glazing area if a building does not meet cross ventilation requirements (see table 1.2).

Residential buildings in 'high risk' locations should also provide shading on East, South & West facing glazed areas via:

1. External shutters (with means of ventilation).
2. Glazing with max G-value 0.4 & min light transmittance (Lt) of 0.7.
3. Overhangs with 50 degrees altitude cut.

Finally is the minimum openable areas. To meet removing excess heat table 1.3 shows the minimum openings required.

Table 1.2 Limiting solar gains for buildings or parts of buildings without cross-ventilation⁽¹⁾

Largest glazed façade orientation	High risk location		Moderate risk location	
	Maximum area of glazing (% floor area)	Maximum area of glazing in the most glazed room (% floor area of room)	Maximum area of glazing (% floor area)	Maximum area of glazing in the most glazed room (% floor area of room)
North	15	26	15	26
East	11	18	18	26
South	11	11	15	15
West	11	18	18	11

NOTE:

1. Floor area and floor area of room are as defined in Appendix A.

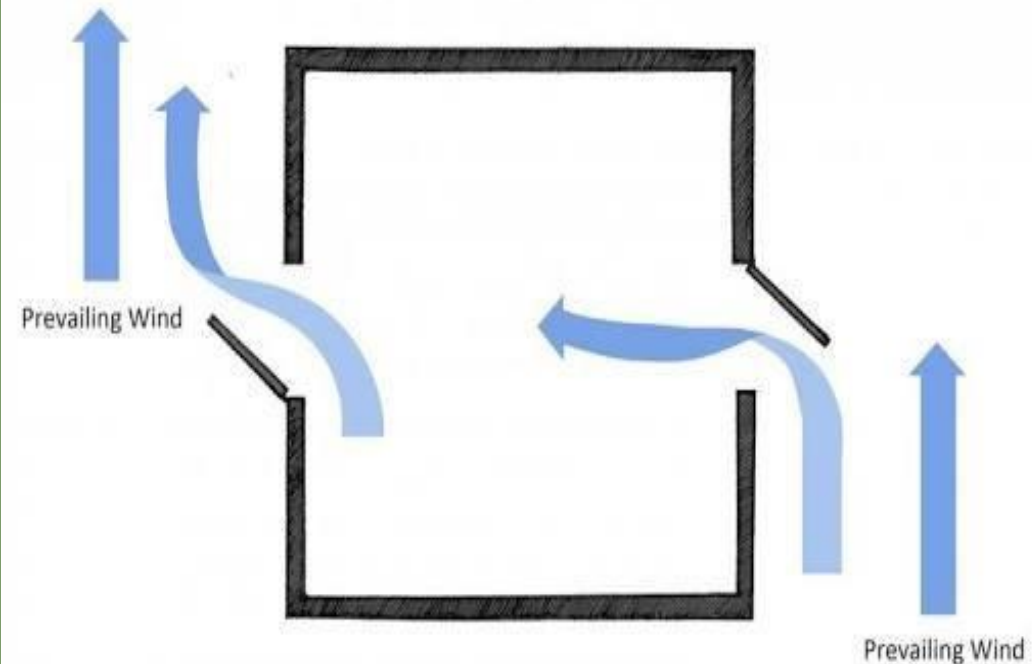


Table 1.3 Minimum free areas for buildings or parts of buildings with cross-ventilation

	High risk location	Moderate risk location
Total minimum free area ⁽¹⁾	The greater of the following: a. 6% of the floor area ⁽²⁾ b. 70% of the glazing area ⁽³⁾	The greater of the following: a. 9% of the floor area ⁽²⁾ b. 55% of the glazing area ⁽³⁾
Bedroom minimum free area	13% of the floor area of the room ⁽⁴⁾	4% of the floor area of the room ⁽⁴⁾

Dynamic Thermal Modelling method for overheating compliance

A Dynamic Thermal Modelling method for overheating compliance is used when:

- The simplified method is too prescriptive.
- The designer/architect would like to design a building outside the simplified limits, offering flexibility.

For compliance a buildings Dynamic Thermal Model must undergo and satisfy a CIBSE TM59 overheating assessment.

In new homes that are naturally ventilated overheating is defined as:

- Bedrooms warmer than 26°C for 1% of the year's sleeping hours.
- No room may exceed 26°C by more than 1°C for more than 3% of annual occupied hours.

In new homes with mechanical ventilation, overheating is defined as:

- Rooms that are 26°C for more than 3% of annual occupied hours.



Compliance with the new 2022 standards

Part F

- We have introduced a new standard vent with a 4600mm² EA rating, resulting in less vents needed to comply per habitable room.

Part L

- Bereco products go beyond the new Approved Document L, with u-values up to 25% better than the new standards on both windows and doors.

Part O

- Anti sun glazing available with G-Value ranging between 0.2-0.4.



How Bereco Can Support You.

We support our customers with range of free literature and advice:

Educational Literature and Support

- Future Home & Building Standard whitepaper released in June.
- Resource Centre offering full access to performance data, certification, PDF & CAD downloads to aid planning applications and energy performance calculations (SAP10).

Our Products & Service

- Current products comply with and are up to 25% better than the new 2022 regulations.
- Our timber products are future proof with the potential Part Z being released 2025 which focuses on material whole life cycle analysis and their carbon emissions – timber is carbon negative.
- We have an excellent, well established sustainability agenda aligned with the FHS and the movement towards the UK becoming nett zero-carbon.
- We have data available for SAP models.
- We have in-house Building Regulation experts.

Specifying Bereco

Specifying Bereco is easy:

The Bereco Resource Centre:
berecoresourcecentre.co.uk

NBS Source website:
source.thenbs.com

Speak to us:
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01709 838188





Any Questions?

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Upcoming Webinars

July - How The Future Homes Standards Will Impact Window Design In The Next 5 Years.

August - From The Forest To Your Front Door- Exploring Chain Of Custody.

September - Specifying Sliding Sash Windows.

October - How Timber Windows Can Help You Achieve Net Carbon Zero.

For a full list of available webinars please visit the Bereco website