



What is the purpose?

Approved Document F is related to ventilation of buildings. Ventilation is required to allow fresh air from outside to replace the stale unwanted air inside. Background ventilation supports mechanical and purge ventilation and assists in providing air required for breathing, diluting and removal of odours and pollutants that might become hazardous to health and controlling humidity (and hence assisting to combat condensation).

NOTE: *Trickle ventilators are not suitable for satisfying Approved Document J by providing air for fuel-burning appliances.*

Ventilating the home has never been more important than now. Historically, our buildings had ill-fitting doors and windows, open fireplaces (or ventilated chimney breasts), ill-fitting loft hatches providing many opportunities for internal stale air replacement. However, over recent years we have been doing more and more to improve the airtightness of our buildings by gasket sealing all openings and even spring-loading and adding brushes to letterboxes.

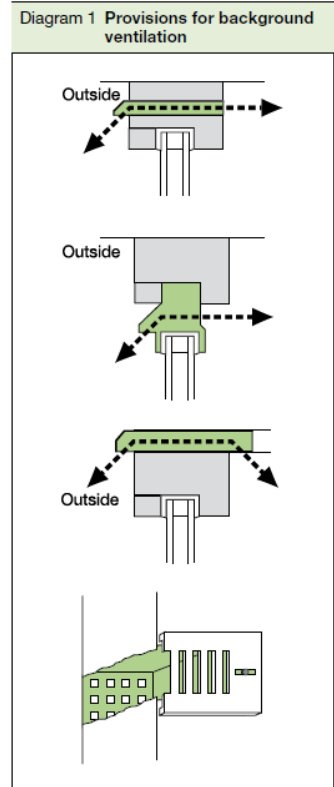
Ventilation is simply the supply of 'fresh' outdoor air into a building and the removal of 'stale' indoor air from a building. We need it:

- to provide air for breathing;
- to remove bad odours and pollutants generated;
- to prevent condensation becoming a serious problem;
- to provide thermal comfort in the summer.

(Building Research Establishment IP 9/04)

NOTE: *Approved Document F does not consider a window with a night latch position adequate for background ventilation*

NOTE: *The requirements for the provision of background ventilation were amended by DLUHC (formerly MHCLG). These new provisions are in effect for all installations in England from **15th June 2022**. In addition, The Welsh Government amended their approved document that affects installations in Wales from **23rd November 2022**. Therefore, surveying processes must ensure that windows and doors installed from this date are appropriately specified.*



Work on Existing Buildings

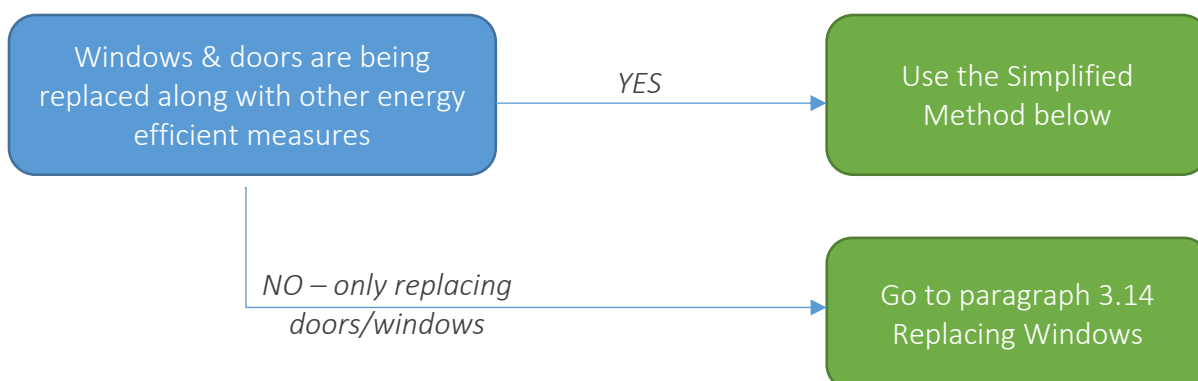
This information is directed at competent person schemes and so has been produced in consideration of replacement windows in existing buildings.

NOTE: *If there is a current or on-going issue of condensation and mould growth, background ventilators should always be provided.*

Extracted from Approved Document F 2021 - Volume 1: Dwellings

- 3.2 When other building work is carried out that will affect the ventilation of the existing dwelling, for example:
- a) replacing a window or door
 - b) doing energy efficiency work
- the ventilation of the dwelling should either:
- a) meet the standards in the relevant approved document
 - b) not be less satisfactory than before the work was carried out.
- NOTE:** Ventilation through infiltration should be considered to be part of the ventilation provision of a dwelling. Reducing infiltration might reduce the indoor air quality of the dwelling below the standards given in Appendix B.

- 3.3 For common types of work, the requirements of paragraphs 3.1 and 3.2 may be demonstrated by following the guidance detailed below.
- a) For installing energy efficiency measures excluding window replacement, paragraphs 3.6 to 3.13.
 - b) For installing energy efficiency measures including window replacement, paragraphs 3.6 to 3.13 and 3.14 to 3.16.
 - c) For replacing windows only, paragraphs 3.14 to 3.16.
 - d) d. For the addition of a habitable room, paragraphs 3.17 to 3.20.
 - e) e. For the addition of a conservatory, paragraphs 3.21 to 3.24.
 - f) f. For the addition of a wet room, paragraphs 3.25 to 3.29.
 - g) g. For refurbishing a kitchen or bathroom, paragraphs 3.30 to 3.32.
 - h) h. For work done to improve the ventilation of the dwelling that was not triggered by the building work in (a) to (g). Section 1 should be followed.



Installing Energy Efficient Measures

Extracted from Approved Document F 2021 - Volume 1: Dwellings

- 3.6 Many existing dwellings are ventilated through infiltration rather than purposeful ventilation. Energy efficiency measures carried out on existing dwellings might reduce infiltration and cause the dwelling to become under-ventilated.
Building work should not reduce the ventilation provision of the dwelling unless it can be demonstrated that the ventilation provision after the work is carried out meets the minimum standards of requirement F1(1).
- 3.7 When carrying out energy efficiency measures to an existing dwelling, an assessment should determine what, if any, additional ventilation provision is needed, based on the estimated impact of the work. The assessment should be carried out by one of the following means.
- a) Applying the simplified method in paragraphs 3.8 to 3.13.
 - b) Seeking expert advice, which may include carrying out an air permeability test that follows the procedures given in Approved Document L, Volume 1: Dwellings.

The Simplified Method

As a full ventilation assessment and comparison would be complex and potentially costly in terms of time and money, the approved document provides a simplified approach to determine what background ventilation is required.

Extracted from Approved Document F 2021 - Volume 1: Dwellings

NOTE: The simplified method set out in paragraphs 3.8 to 3.13 is designed to apply to an existing dwelling that is assumed to have adequate means of ventilation through a combination of purpose- provided ventilation and infiltration. If the property differs significantly from this assumption, the requirements of paragraph 3.6 must still be met. This should be demonstrated through seeking expert advice or using another suitable method.

3.8 When carrying out energy efficiency measures on an existing dwelling, Table 3.1 should be used to calculate the number of major and minor energy efficiency measures involved. This calculation should include all of the following.

1. Energy efficiency measures fitted since the original dwelling was constructed, to consider accumulation of measures.
2. Energy efficiency measures planned.

NOTE: Where specific energy efficiency measures are not included in Table 3.1, the most similar category should be chosen instead.

3.9 Diagram 3.1 should then be used to determine the category that the works result in.

The simplified approach requires consideration of all energy efficiency measures to be undertaken to the property, then assigning a category to each measure.

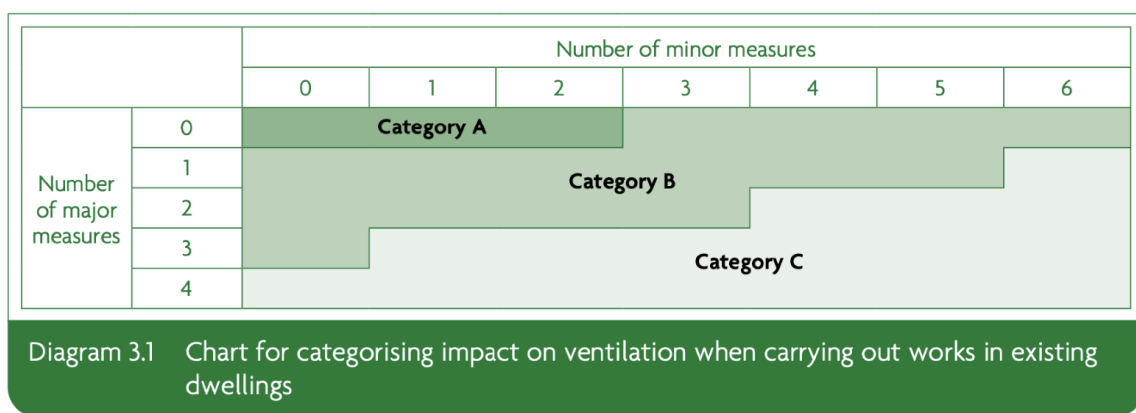
NOTE: If only replacement doors and windows are being undertaken (i.e. no other energy efficient measures) do not use the simplified method, go to Replacing Windows (paragraph 3.14 on page 7).

Also refer to the Technical Guidance on “Supporting Information Background Ventilation 30% Rule”.

Table 3.1 Energy efficiency measures		Category of measure
Roof insulation		
a.	Renewing loft insulation, including effective edge sealing at junctions and penetrations	Minor
b.	Loft conversions or works that include changing a cold loft (insulation at ceiling level) to a warm loft (insulation at roof level)	Minor
Wall insulation		
c.	Installing cavity wall insulation to any external wall	Minor
d.	Installing external or internal wall insulation to less than or equal to 50% of the external wall area	Minor
e.	Installing external or internal wall insulation to more than 50% of the external wall area	Major
Replacement of windows and doors⁽¹⁾		
f.	Replacing less than or equal to 30% of the total existing windows or door units	Minor
g.	Replacing more than 30% of the total existing windows or door units	Major
Draught-proofing (other than openings)⁽²⁾		
h.	Replacing a loft hatch with a sealed/insulated unit	Minor
i.	Sealing around structural or service penetrations through walls, floors or ceiling/roof	Minor
j.	Sealing and/or insulating a suspended ground floor	Major
k.	Removing chimney or providing another means of sealing over chimney, internally or externally	Major
NOTES:		
1. If the energy efficiency works involve only replacing windows, then the guidance in paragraphs 3.14 to 3.16 may be followed as an alternative means of demonstrating compliance.		
2. Draught-proofing measures might not, on their own, constitute building work. This work may be controllable under the Building Regulations if carried out as part of other building work.		

(Extracted from Approved Document F 2021 - Volume 1: Dwellings)

The number of minor and major measures are referenced in the following table, which then returns a Category of work that determines the ventilation requirement.



(Extracted from Approved Document F 2021 - Volume 1: Dwellings)

- 3.10 If the method in Diagram 3.1 results in the work being categorised as Category A, it is likely that the energy efficiency measures have *not* reduced the ventilation provision of the dwelling below the requirements of F1(1) so no further ventilation provision is necessary.
- 3.11 If the method in Diagram 3.1 results in the work being categorised as Category B, it is likely that the ventilation provision of the dwelling has been reduced below the requirements of F1(1). Further ventilation provision should be provided by one of the following means.
- a) Natural ventilation, by following the system-specific guidance in paragraphs 1.47 to 1.59. It is assumed that any existing purpose-built ventilators are in working order and that the equivalent area has not been compromised.
 - b) Continuous mechanical extract ventilation, by following the system-specific guidance in paragraphs 1.60 to 1.66.
 - c) Mechanical ventilation with heat recovery, by following the system-specific guidance in paragraphs 1.67 to 1.73. To avoid unintended air pathways, existing background ventilators should be covered or sealed shut.
- 3.12 If the method in Diagram 3.1 results in the work being categorised as Category C, it is likely that the ventilation provision of the dwelling has been reduced *significantly* below the requirements of F1(1). Further ventilation should be provided by one of the following means.
- a) Natural ventilation, by following expert advice for the design, sizing and positioning of ventilators to ensure adequate ventilation provision.
 - b) Continuous mechanical extract ventilation, by following the system-specific guidance in paragraphs 1.60 to 1.66.
 - c) Mechanical ventilation with heat recovery, by following the system-specific guidance in paragraphs 1.67 to 1.73. To avoid unintended air pathways, existing background ventilators should be covered or sealed shut.

<p>Category A It is likely the work has not reduced the ventilation provision.</p>	<p>No further ventilation provision is necessary and so the situation should not be made any worse. If trickle ventilation exists in the outgoing windows, they should be provided in the replacements.</p>
<p>Category B It is likely the work has reduced the ventilation provision.</p>	<p>Further ventilation should be provided one of the identified methods in 3.11.</p>
<p>Category C It is likely the work has reduced significantly the ventilation provision.</p>	<p>Further ventilation should be provided one of the identified methods in 3.12.</p>

Windows replaced as part of a larger project

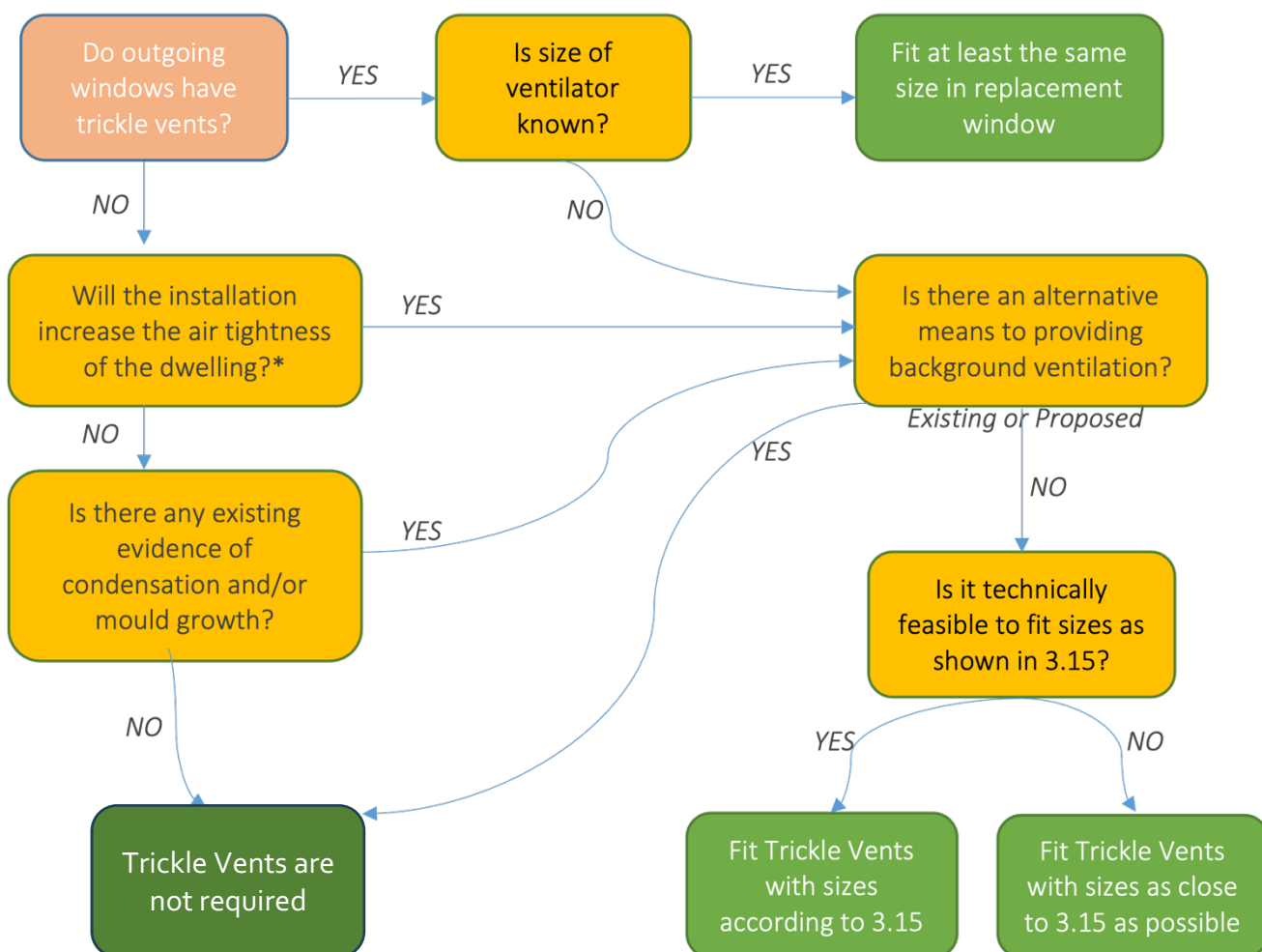
Where window replacement is taking place as part of a wider whole house renovation, it may be possible that background ventilation is to be provided by whole house mechanical ventilation or an alternate system. This work may be carried out at a later stage than the window replacement. Where this occurs, it is advised to obtain evidence of the intention to carry out this additional work.

An example of acceptable evidence would be a signed order confirmation with the installation company from the consumer for the proposed installation for alternate background ventilation. Please note; until the alternative method of providing background ventilation is installed, the window/door installation cannot be registered as it would not yet be deemed compliant.

REPLACING WINDOWS

While trickle ventilators are generally required in the vast majority of cases, there are alternative strategies to achieve background ventilation requirements as referred to in Approved Document F. The below flow chart gives an explanation of what these limited opportunities are.

It is important to note that whilst simplifying the process, this does not cover all eventualities and so some installations may require further inquisition.



*Evidence of air tightness, both pre and post installation, will be required to demonstrate compliance of no increase in air tightness

Existing windows with background ventilators

- 3.14 If the existing windows have background ventilators, the replacement windows should include background ventilators. The new background ventilators should comply with both of the following conditions.
- a) Not be smaller than the background ventilators in the original window.
 - b) Be controllable either automatically or by the occupant.
- If the size of the background ventilators in the existing window is not known, the ventilator sizes in paragraph 3.15 may be applied.

(Extracted from Approved Document F 2021 - Volume 1: Dwellings)

Existing windows without background ventilators

- 3.15 Replacing the windows is likely to increase the airtightness of the dwelling. If ventilation is not provided via a mechanical ventilation with heat recovery system, then increasing the airtightness of the building may reduce beneficial ventilation in the building. In these circumstances, it is necessary to ensure that the ventilation provision in the dwelling is no worse than it was before the work was carried out. This may be demonstrated in any of the following ways.
- a. Incorporating background ventilators in the replacement windows equivalent to the following.
 - i. Habitable rooms – minimum 8000mm² equivalent area.
 - ii. Kitchen – minimum 8000mm² equivalent area.
 - iii. Bathroom (with or without a toilet) – minimum 4000mm² equivalent area.
 - b. If the dwelling will have continuous mechanical extract ventilation, installing background ventilators in any replacement windows which are not in wet rooms, with a minimum equivalent area of 4000mm² in each habitable room.
 - c. Other ventilation provisions, if it can be demonstrated to a building control body that they comply with the requirements of paragraph 3.2.
- NOTE:** If it is not technically feasible to adopt the minimum equivalent areas set out in paragraph 3.15, the background ventilators should have equivalent areas as close to the minimum value as is feasible.

(Extracted from Approved Document F 2021 - Volume 1: Dwellings)

Documentary evidence of the pre-install situation

It is essential that pre-install photographs should be provided to ensure that evidence is acquired as it will be identified as a non-compliance under an inspection if no evidence can be reviewed.

Where the original windows were not fitted with trickle ventilators and the room is not ventilated adequately by other installed provisions, it would be good practice to fit trickle ventilators to help with control of condensation and improve indoor air quality, particularly in kitchens, bathrooms and bedrooms or locations where internal drying of clothes may take place.

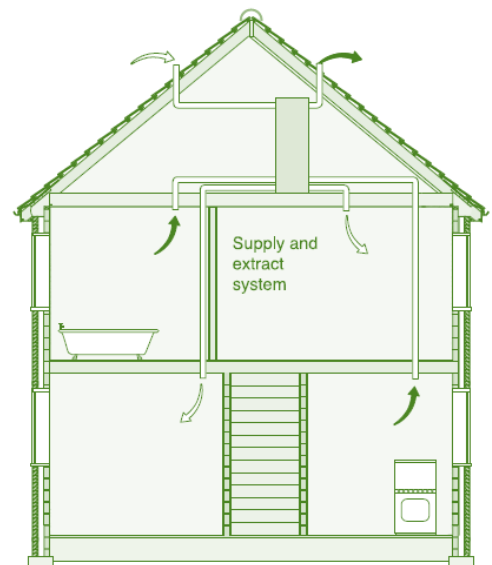
Location and size

Trickle ventilators are generally located in the top of window frames typically 1.7m above floor level to avoid discomfort from draughts.

Free area is the physical size of the vent and may not reflect the air flow performance that the ventilator will achieve. Therefore, when specifying trickle ventilators, the 'equivalent area' value should be used to determine the suitability of the trickle vent after calculating the ventilation requirements.

Whole House Ventilation

It is becoming more common to provide ventilation by means of whole home solutions to ventilating the home. This will be noticeable by ventilation grilles in each room and of course, the occupants will be able to inform you if they have any 'different' type of ventilation and subsequent notes should be made on any survey notes or documentation to illustrate that the provision for background ventilation is being met by an alternative means to the provision of trickle ventilators.



Noise

In areas where external noise may be an issue such as flight paths or busy road locations, consider specifying acoustic window vents. These may cost more but they could be offered as an optional extra to consumers. These can provide a sound reduction of up to 40dB when open. For a comparison, a car travelling at 65 mph from 25 ft is 77dB, the reduction would be reduced equivalent to a quiet suburban area which could be around 50dB.

IN SUMMARY

- These new provisions are in effect for all installations from **15th June 2022**.
- If windows are being fitted as part of other energy efficient measures, use the Simplified Method.
- If only replacement doors/windows are being fitted, background ventilation should be provided.
- If there is existing evidence of condensation and/or mould growth, background ventilation should be provided.
- If the outgoing windows have trickle vents, provide trickle vents to replacement windows.
- If the outgoing windows do not have trickle vents and the airtightness will be increased, provide trickle vents to replacement windows.
- Trickle ventilators are not suitable for satisfying Approved Document J by providing air for fuel-burning appliances.
- A window with a night latch position is not adequate for background ventilation, due to the risk of draughts, security issues and the difficulty of measuring the equivalent area.

Additional Information

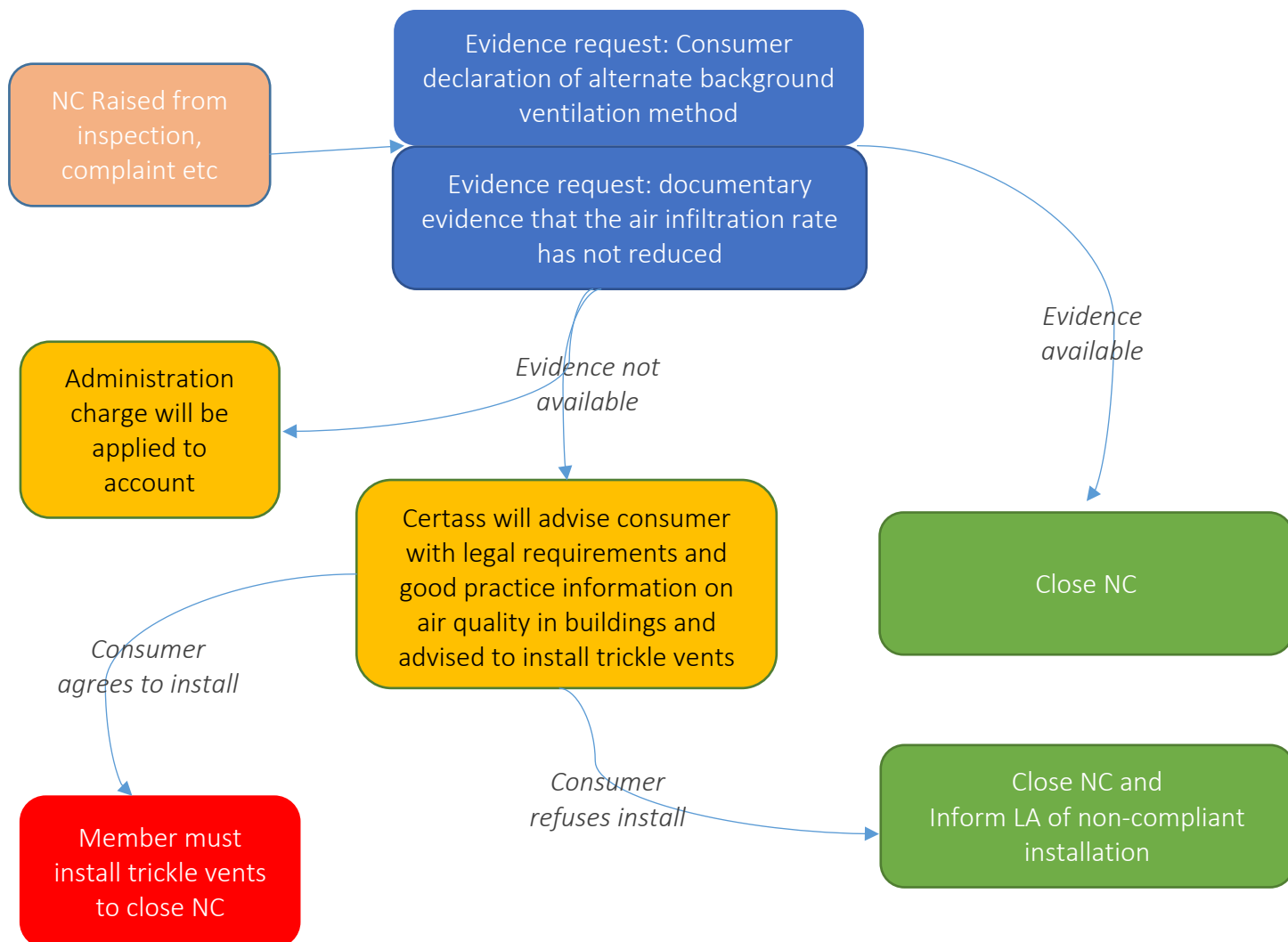
- The Glasgow School of Art Mackintosh Environmental Research Unit (MEARU) has conducted research into the health and wellbeing of building occupants in new homes, and issued a film designed to help people appreciate the effects of poor ventilation in overly airtight places. Video and document links summarising this research are below:
 - <https://player.vimeo.com/video/163384704>
 - <https://ihbconline.co.uk/newsarchive/?p=12669>
- Additional ventilation information from Government
<https://www.gov.uk/government/publications/home-user-guide-template/existing-home-ventilation-guide>
- Certass guide BR/F/D/6/0519 Purge Ventilation
- Link to the Planning Portal website to view/download the Approved Documents
https://www.planningportal.co.uk/info/200135/approved_documents

Supporting Information

- CTA TechSheet - Supporting Information Background Ventilation 30 percent rule

Non-Compliance (NC) Process

Where on audit, or where we receive notification of a breach of the building regulations from a consumer or other party, we will follow the process laid out below when managing the non-compliance.



We hope you have found this useful and informative.....

If there are any topics that you think you would benefit from, please let us know as soon as possible and if possible, we will add them to the agenda.