MNZH VENTILATION BASIC GOOD PRACTICE

1 SIMPLE HEADLINE SUMMARY

1.1 TIMING

Do ventilation works before or at the same time as other works. This minimises the potential for refusal of ventilation work after other works are completed (which would make works non-compliant).

1.2 ENGAGEMENT

Ventilation measures are often 'hard to accept' for households. Good engagement can be key to helping households to understand the need for ventilation work. Ventilation engagement that explains the purpose and value of the ventilation, and the nature of the work - can help avoid abortive install visits when households are 'surprised' by ventilation works.

The MNZH Ventilation Cheat-Sheet references some helpful ventilation materials for supporting household engagement. This sheet and other resources can be found on the AECL website HERE:

1.3 TECHNICAL

1.3.1 Primary Recommendation

- **Ventilation approaches in DESNZ projects will typically be based around Intermittent Extract Fans (IEV) or Individual Constant Extraction Fans (dMEV).**
    - **Where these are the basis of the ventilation solution the Midlands Net Zero Hub (MNZH or 'the Hub') recommends that Under-Cuts and Trickle vents are also included (in line with the Part F simplified Method).**
    - **Approaches (with IEV or dMEV) that typically do not result in the inclusion of Under-Cuts and Trickle vents are not recommended.**

1.3.2 Secondary Recommendation

- The Hub also recommends the use of the following templates and tables from Building Regulations, Approved Document F, Ventilation:
    - Table D1;
    - Table 3.1 and
    - Appendix C (especially part 2b)

Part F can be found here: https://www.gov.uk/government/publications/ventilation-approved-document-f . Completion of these tables will help to focus on core basics for ventilation good practice.

1.4 PROJECTS IN PRIVATE VS SOCIAL STOCK

Typically, Hub members delivering in their own housing stock are likely to be more deeply involved in project delivery, in setting out ventilation specifications, and in their ventilation documentation requirements associated with DESNZ funded works. For LAs working with private sector homes, it will typically be important to ensure that you are not accidentally 'signing-off' on ventilation (docs, approaches, spec etc) – unless you are proactively engaging in checking these details.

2 INTRODUCTION

The importance of ventilation is increasingly being recognised and required in standards, regulations, compliance, and funding. Much of the delivery 'on the ground', is significantly behind this curve. The Hub has created this simple guidance to help members and stakeholders to deliver ventilation that is both compliant, and good practice, within their project delivery.

2.1 IMPORTANCE OF VENTILATION

Ventilation is important because we need to remove moist, stale air and replace it with a supply of fresh air. Without this taking place the air in a home becomes a comfort problem; a risk to the building fabric; and a risk to the health of occupants. The death of Awaab Ishak is an extreme example of the health risks from inadequately ventilated homes. Much more common, is the slower and lower-level damage that can occur, often unnoticed, over a long period. The key to good ventilation is balance – providing the *right* level of ventilation in all rooms.

A Parliamentary Post on Indoor Air Quality can be found here:
https://researchbriefings.files.parliament.uk/documents/POST-PB-0054/POST-PB-0054.pdf

2.2 RECENT DEVELOPMENTS

Historically our homes have been very leaky (i.e. not airtight). This has often meant that there has been enough natural background ventilation occurring, albeit in an uncontrolled way, because the leaky nature of the fabric sometimes allowed for an adequate level of air changes. As a strategy, this would be a very 'hit-and-miss' approach. The modern maxim for airtightness and ventilation is "Build tight, ventilate right!"

Building Regulations (Part F)
Building Regulations now include ventilation requirements for works to existing homes – including energy efficiency measures. This is a significant step up in terms of the ventilation requirements for existing homes. This guidance leans heavily on templates from Building Regulations Part F as basic elements for interaction to ensure robust good practice ventilation delivery in your projects.

PAS2035:2023
The new version of PAS2035 (which takes effect April 2025) has significantly more clear and robust ventilation requirements than its predecessor.

BS40104 Retrofit assessment for domestic dwellings – Code of practice
At the time of writing this new BS standard was in its consultation phase. This standard might require a significant upgrade for ventilation assessments. Potentially requiring a measurement of the actual performance for each fan, i.e. an accurate measured flow rate.

2.3 INTERPRETATIONS IN DELIVERY

Historically PAS2035 has been very clear on what makes ventilation "inadequate" at survey. But the words have been less clear on what must be done where ventilation is found to be 'inadequate'. Furthermore, Part F of the building Regulations provides a 'Simplified Method' for ventilation in existing homes – but it does also allow other approaches to be taken. This has allowed for the deployment of approaches that typically do not require Under-Cuts &/or Trickle vents (with IEV or dMEV).

3 RECOMMENDATIONS

MNZH basic summary
For the vast majority of homes in programs like SHDF; HUG2; WH:LG; and WH:SHF – the Hub's recommended **good practice for ventilation will mean Fans, Under-Cuts, & Trickle vents**. This is in line with the requirements in Part F's 'Simplified Method', and both the spirit and wording in PAS2035 (new and old versions).

We have tried to provide good practice recommendations below by chronological stage. For the recommendations within each stage we have tried to put recommendations in priority order. Starting with the easiest and most basic; and moving into increasingly 'deep' or advanced requirements.

3.1 'SURVEY'

1. Basic good practice will at least identify elements by room – including the presence or absence of Damp, Mould or Condensation. E.g. something like this:

Room	Damp Mould Condensation	Fan	UnderCut	Trickle
Living room	None	No	No	Yes
Kitchen	Yes (see detail)	Yes	Yes	No
Bedroom 1	None	No	No	No
Bathroom	Yes	No	No	No
Etc				

2. The Hub recommends also using Table D1 "Checklist for ventilation provision in existing dwellings" from Part F (provided at the back of this guidance),
    a. Require the ventilation part of the Retrofit Assessment to include the completion of Table D1.
    b. Request that these are provided to you.
3. The Hub recommends also using Table 3.1 "Energy Efficiency Measures" from Part F (provided at the back of this guidance). This includes completing the measures chart.
    a. Require the ventilation part of the Retrofit Assessment to include the completion of Table 3.1.
    b. Request that these are provided to you.
4. **Note:** The New BS40104, and PAS2035:2023 may both include the actual measurement of the flow rates for fans.

3.2 VENTILATION STRATEGY & SPECIFICATION

The nature of regulations can create scope for different interpretations. There is also potential complexity because there are many different types of ventilation approach. For the vast majority of homes in DESNZ funded projects – the ventilation solution is likely to be based around dMEV (individual constant extract fans in wet rooms, with a boost function) or IEV (intermittent extract fans in wet rooms).

Assuming a dMEV or IEV approach: ***The Hub recommends strategies based around Fans, Under-Cuts and Trickle vents.*** ***Solutions which typically do not require Under-Cuts or Trickle vents are not recommended.*** NB: the dMEV solution does not include trickle vents in wet rooms. The IEV solution does include trickle vents in wet rooms.

The "Simplified method" in Part F will typically result in Fans, Under-Cuts and Trickle vents. PAS2035:2023 Annex C covers ventilation requirements, and PAS2035 can require higher standards than those in Part F.

1. Solution Detail – room by room

Just as with the Assessment, the improvement requirements should also be provided room by room. This should include specific details for specification and performance.

3.3 COMMISSIONING

Appendix C of Part F includes a "Completion checklist and commissioning sheet".

1. The Hub recommends requiring at least Part 2b of the Part F completion checklist.
    a. Ask for these to be provided to you.
2. The Hub recommends requiring provision of a completed of Part 3 of the completion checklist
3. The Hub recommends requiring provision of a full completed Completion Checklist.

Tables and templates from Part F

Table D1

Table D1 Checklist for ventilation provision in existing dwellings

Natural ventilation[1]		
What is the total equivalent area of background ventilators currently in dwelling?		mm^2
Does each habitable room satisfy the minimum equivalent area standards in Table 1.7[2]?	Yes	No
Have all background ventilators been left in the open position?	Yes	No
Are fans and background ventilators in the same room at least 0.5m apart?	Yes	No
Are there working intermittent extract fans in all wet rooms?	Yes	No
Is there the correct number of intermittent extract fans to satisfy the standards in Table 1.1?	Yes	No
Does the location of fans satisfy the standards in paragraph 1.20?	Yes	No
Do all automatic controls have a manual override?	Yes	No
Does each room have a system for purge ventilation (e.g. windows)?	Yes	No
Do the openings in the rooms satisfy the minimum opening area standards in Table 1.4?	Yes	No
Do all internal doors have sufficient undercut to allow air transfer between rooms as detailed in paragraph 1.25 (i.e. 10mm above the floor finish or 20mm above the floor surface)?	Yes	No
Continuous mechanical extract ventilation[1]		
Does the system have a central extract fan, individual room extract fans, or both?	Yes	No
Does the total combined continuous rate of mechanical extract ventilation satisfy the standards in Table 1.3?	Yes	No
Does each minimum mechanical extract ventilation high rate satisfy the standards in Table 1.2?	Yes	No
Is it certain that there are *no* background ventilators in wet rooms?	Yes	No
Do all habitable rooms have a minimum equivalent area of $5000mm^2$?	Yes	No
Does each room have a system for purge ventilation (e.g. windows)?	Yes	No
Do the openings in the rooms satisfy the minimum opening area standards in Table 1.4?	Yes	No
Do all internal doors have sufficient undercut to allow air transfer between rooms as detailed in paragraph 1.25 (i.e. 10mm above the floor finish or 20mm above the floor surface)?	Yes	No
Mechanical ventilation with heat recovery[1]		
Does each habitable room have mechanical supply ventilation?	Yes	No
Does the total continuous rate of mechanical ventilation with heat recovery satisfy the standards in Table 1.3?	Yes	No
Does each minimum mechanical extract ventilation high rate satisfy the standards in Table 1.2?	Yes	No
Have all background ventilators been removed or sealed shut?	Yes	No
Does each room have a system for purge ventilation (e.g. windows)?	Yes	No
Do the openings in the rooms satisfy the minimum opening area standards in Table 1.4?	Yes	No
Do all internal doors have sufficient undercut to allow air transfer between rooms as detailed in paragraph 1.25 (i.e. 10mm above the floor finish or 20mm above the floor surface)?	Yes	No

NOTES:

1. Make a visual check for mould or condensation. If either are present, install additional ventilation provisions or seek specialist advice.
2. All references to tables and paragraphs are to Approved Document F, Volume 1: Dwellings.

Table 3.1

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.

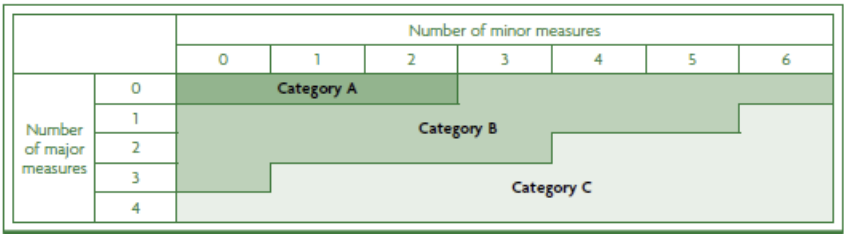

Diagram 3.1 Chart for categorising impact on ventilation when carrying out works in existing dwellings

Completion Checklist Part 2b

2b.1 Visual inspections – general (all systems)		
What is the total installed equivalent area of background ventilators in the dwelling?		mm^2
What is the total floor area of the dwelling?		m^2
Does the total installed equivalent ventilator area meet the standards detailed in Table 1.7 or paragraph 1.57[1], as appropriate?	Yes	No
Have all background ventilators been left in the open position?	Yes	No
Have the correct number and location of extract fans/terminals been installed to satisfy the standards in Table 1.1 or Table 1.2, as appropriate?	Yes	No
Is the installation complete, with no obvious defects?	Yes	No
Do all internal doors have enough undercut to allow air transfer between rooms as detailed in paragraph 1.25 (i.e. 10mm above the floor finish or 20mm above the floor surface)?	Yes	No
Has all protection/packaging been removed (including from background ventilators), so that the system is fully functional?	Yes	No
Are systems clean internally and externally?	Yes	No
Has the entire system been installed to allow access for routine maintenance and to repair/replace components?	Yes	No
2b.2 Visual inspections – general (continuous mechanical extract ventilation and mechanical ventilation with heat recovery systems only)		
Have appropriate air terminal devices been installed to allow system balance?	Yes	No
Have the heat recovery unit and all ductwork been effectively insulated and sealed for all heated and unheated spaces?	Yes	No
Is the condensate connection complete and does the condensate drain to an appropriate location (mechanical ventilation with heat recovery only)?	Yes	No
Are filters installed?	Yes	No
For ducted systems, has the ductwork been installed so that air resistance and leakage is kept to a minimum?	Yes	No
2b.3 Other inspections – general (all systems)		
At initial start-up, was there any abnormal sound or vibration, or unusual smell?	Yes	No
During continuous operation, was there any excessive noise?	Yes	No

NOTE:
1. All references to tables and paragraphs are to Approved Document F, Volume 1: Dwellings.

V2.0 21st July 2025: A more advanced ventilation good practice guide is planned for later this year.