



Rialtas na hÉireann  
Government of Ireland

# Validation of ventilation systems in NZEB dwellings in Ireland

## EPBD Feasibility Study 19a

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# Irish Building regulations



- Part F – Ventilation
- Part L – Conservation of Fuel and Energy – Dwellings
- Part F & L Dwellings 2019 – June 2019
- Technical Guidance Documents (TGD) F & L Dwellings 2019 to apply to new Dwellings commencing construction from 1<sup>st</sup> November 2019 subject to transition
- Transitional arrangements to allow TGD F 2009 and TGD L 2011 - Dwellings to be used where planning approval or permission has been applied for on or before application date and substantial completion is completed within 1 year i.e. by 1<sup>st</sup> November 2020

# Dwelling ventilation rate requirement



- Minimum 0.5 air change requirement.
- Whole dwelling minimum continuous rate based on greater of:
  - *5 l/s plus 4 l/s per person, e.g. 25 l/s for a five person, 3-bedroom semi-detached dwelling. This is based on two occupants in the main and second bedrooms, and a single occupant in the third bedroom. This should be used as the default value, if a greater level of occupancy is expected, then add 4 l/s per occupant.*
  - *0.3 l/s per m<sup>2</sup> internal floor area, e.g. 30 l/s for a 100 m<sup>2</sup> dwelling.*
- Minimum boost extract rates:

**Table 1: Centralized continuous mechanical extract ventilation systems: minimum boost extract rates<sup>1</sup>**

<b>Wet rooms</b>	<b>Minimum extract rate (l/s)</b>
Kitchen	13 <sup>2</sup>
Utility room	8
Bathroom	8
Sanitary accommodation (no bath or shower)	6 <sup>3</sup>

# TGD F 2019: Changes vs 2009



- TGD L 2019 introduces backstop values of 5 m<sup>3</sup>/h.m<sup>2</sup> for air permeability. All dwellings to be air tightness tested by an independent competent person certified by an independent third party.
- TGD F 2019 ventilation systems application range:

Ventilation System	Air Permeability range: 3-5 m <sup>3</sup> /h.m <sup>2</sup>	Air Permeability range: Less than 3 m <sup>3</sup> /h.m <sup>2</sup>
CMEV	✓	✓
MVHR	✓	✓
Natural Ventilation with intermittent extract ventilation	✓	✗

- **1.2.4: Natural ventilation with intermittent extract**  
Minimum (total) equivalent area of background ventilators increased by 40%.



# TGD F 2019: Changes vs 2009



- **1.2.2.10 and 1.2.3.12: Control indicators**

Control indicators to be in a visible location to the occupant and not in a remote location such as in the attic or above the ceiling. Control indicators should indicate to the occupant that the system is operating correctly and if a fault has occurred.

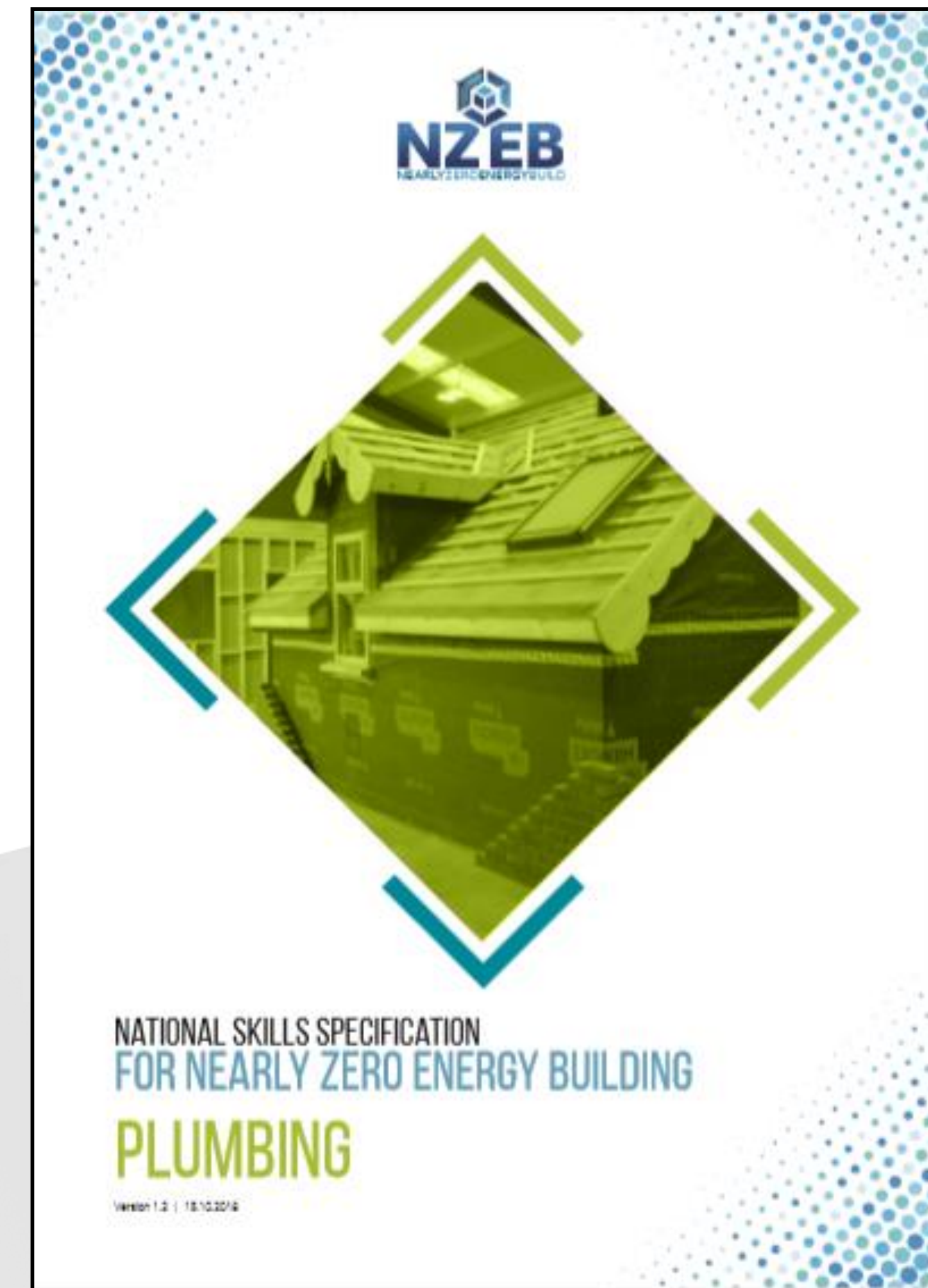
- **1.2.2.12, 1.2.3.14 and 1.2.4.17: Information to home owner**

The owner of the building should be provided with sufficient information about the ventilation systems and their maintenance so that an effective and an efficient ventilation system can be operated and maintained.

# Training



- *Systems should be installed, balanced and commissioned by competent installers e.g. QQI or ETB or equivalent.*
- Waterford and Wexford ETB – NZEB National Training centre, Enniscorthy
- Suite of NZEB training courses: Electrical, Plastering, Carpentry, Bricklaying, Plumbing, Site Supervisor, Installation and Commissioning of ventilation systems
- Course to be rolled out nationally by Department of Education
- Other providers: METAC in Portlaoise

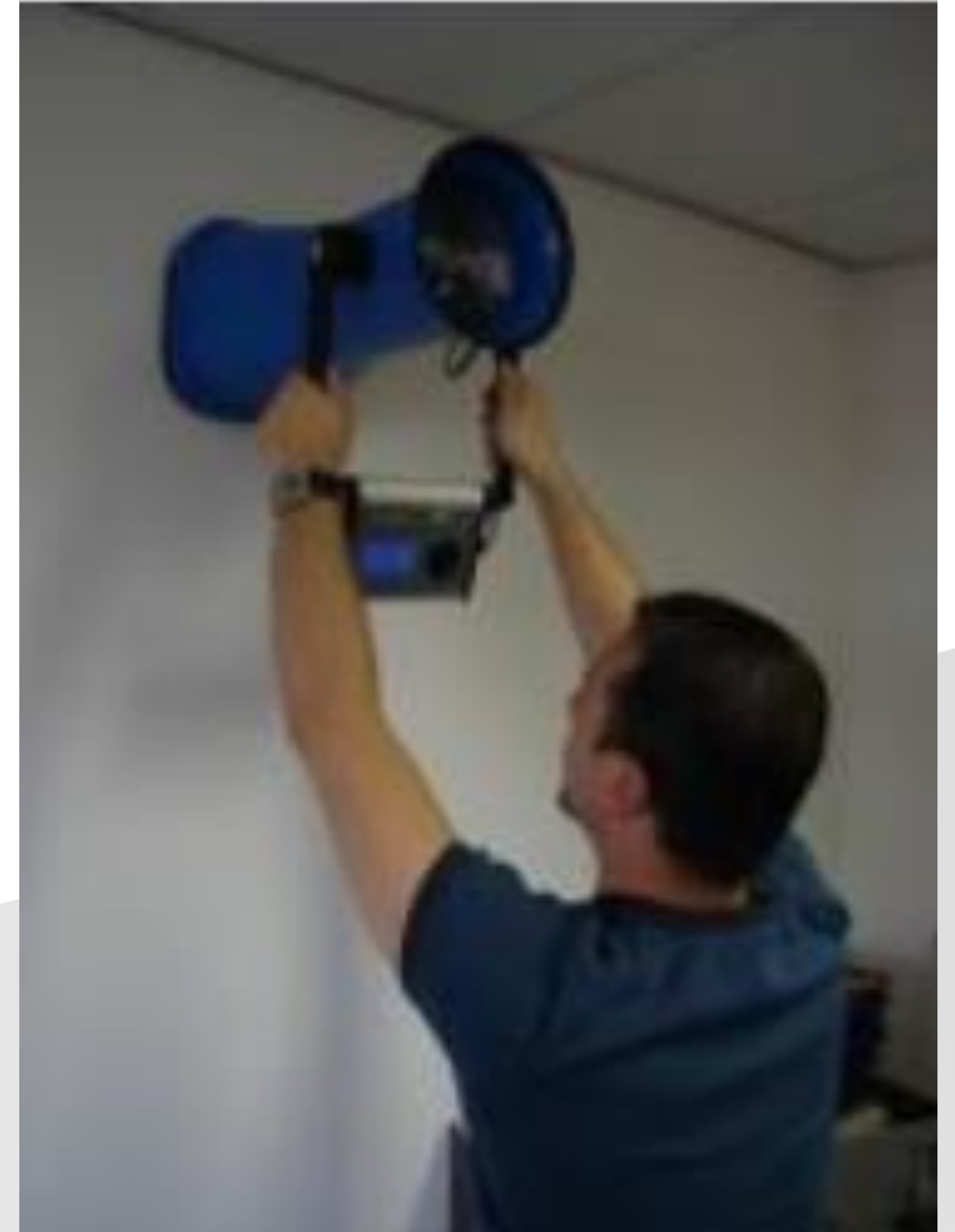




# NSAI Ventilation testing Validation Scheme



- *Systems should **then** be validated - to ensure that they achieve the design flow rates - by an independent competent person certified by an independent third party e.g. NSAI or equivalent.*
- **National Standards Authority of Ireland**
- **NSAI** currently consulting with Ventilation industry
- Based on **I.S. EN 14134** Ventilation for Buildings – Performance Testing and installation checks of residential ventilation systems
- Similar to Certified Air Tightness Tester Scheme (created 2011 – 62 testers in 2019)



# NSAI Ventilation testing Validation Scheme



- [www.n Sai .ie](http://www.n Sai .ie)

## Registration Process:

- NSAI requests a pre-audit submission for review.
- NSAI contacts the company to arrange an audit date (on-site and desktop).
- NSAI issues a report to the company on further steps required to achieve compliance.
- After making the required adjustments, the company is registered.
- The company can now use its official NSAI registration number.
- To maintain registration, the company will undergo annual surveillance audits.

### 10.4 Sample Annual Surveillance Audit Agenda

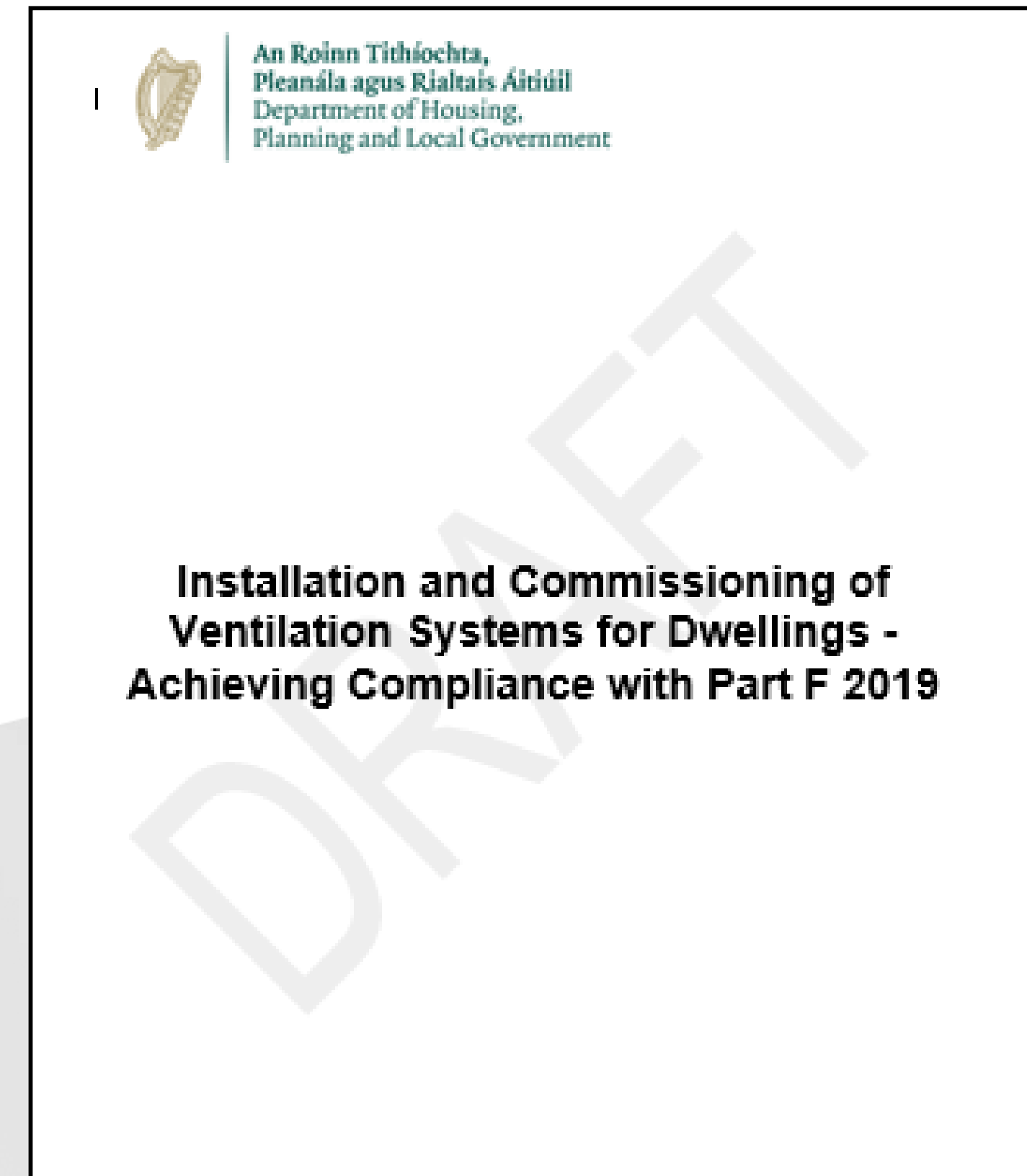
1. Review the register of completed tests performed since registration.
2. Review QA procedures document to establish if there have been any changes to same since certification.
3. Select and review 3 representative test reports,
  - a. Check records for calculations.
  - b. Check recorded values in report.
  - c. Check content of report against the audit document.
4. Check calibrations certificates are valid.
5. Review and discuss scheme document.



# Achieving Compliance with Part F 2019



- *Systems should **then** be validated - to ensure that they achieve the design flow rates - by an independent competent person e.g. NSAI, INAB certified or equivalent.*
- Installation and commissioning Guide for:
  - Continuous Mechanical Extract Ventilation
  - Mechanical Ventilation with Heat Recovery
  - Natural Ventilation
- and
  - Completion checklist and installation/commission/validation sheet templates including measured and design flow rates.



# Major Renovations



- **1.2.2.13 and 1.2.3.15 Major Renovations:**

Where more than 25 % of the surface of the building envelope undergoes renovation the energy performance of the building or the renovated part thereof is upgraded in order to meet minimum energy performance requirements with a view to achieving a cost optimal level in so far as this is technically, functionally and economically feasible (Maximum 125 kWh/m<sup>2</sup>.yr – Minimum B2 building energy rating).

Where new mechanical extract ventilation systems are installed as part of a Major Renovation as defined in Part L-2019, then the system should be designed, installed, commissioned and validated as per 1.2.2.11 and 1.2.3.13.