Title:	Improving Airtightness and Ventilation
Level:	5
Credit value:	1
GLH	8
Unique Reference Number:	L/650/2702
Aim:	The aim of this unit is to provide learners with the knowledge and understanding of the critical role of ventilation in retrofit. Learners will be able to explain the importance of avoiding overheating, factors that impact airtightness and internal air quality, and the advantages and disadvantages of ventilation system options.
Assessment	Assessment of this unit will be through the completion of a mandatory end of qualification knowledge test, professional discussion and scenario case study.

Learning outcomes
The learner will:

1. Be able to explain the purpose and role of ventilation in retrofit.

Delivery content:

The aim of this learning outcome is to provide learners with the knowledge and skills to be able to explain the purpose and role of ventilation in retrofit.

The learner must be able to:

1.1 Explain the 'build-tight, ventilate right' approach to retrofit projects.

1.2 Describe the **effects** of pollutants, condensation and under-heating on dwellings.

1.3 Explain the ventilation assessment and requirements of improved insulation and airtightness required under PAS2035.

1.4 Develop a ventilation strategy under PAS2035 Annex C requirements for a dwelling that has no existing ventilation to living rooms and wet rooms, and ensure it meets the whole house ventilation rates set out in Approved Document F.

2. Be able to explain the importance of avoiding overheating in retrofitted dwellings.
Delivery content: The aim of this learning outcome is to provide learners with the knowledge and skills to Be able to explain the importance of avoiding overheating in retrofitted dwellings. The learner must be able to:
2.1 Identify the **factors** and **risks** that contribute to over-heating in retrofitted dwellings. 2.2 Describe **techniques** for minimising the risk of over-heating.
3. Be able to detail the key factors affecting the airtightness and internal air quality (IAQ) of domestic buildings.
Delivery content: The aim of this learning outcome is to provide the learners with the skills and knowledge to be able to detail the key factors affecting the airtightness and internal air quality (IAQ) of domestic buildings. The learner must be able to: 3.1 Explain building fabric airtightness at 4pa and 50pa. 3.2 Identify **factors** that affect building fabric airtightness. 3.3 Explain how airtightness testing can be utilised under PAS 2035 and what benefits it may provide. 3.4 Explain the different methods that can be used to test air tightness, and the advantages and disadvantages of each method 3.5 Explain how the stack effect impacts ventilation. 3.6 Explain the **concept** and **factors** that impact internal air quality (IAQ) for domestic buildings.
4. Be able to explain ventilation system options.
Delivery content: The aim of this learning outcome is to provide learners with the skills and knowledge to be able to explain ventilation system options. The learner must be able to: 4.1 Identify types of **ventilation systems** and explain their characteristics, advantages and disadvantages. 4.2 Explain how the airtightness of the building fabric influences the choice of ventilation systems.

Scope of Training

The Scope of Training identifies areas that must be covered during the delivery of this unit. This is the minimum that is expected but tutors are expected to include other areas, knowledge of which will benefit their learners, based on location, types of work available and from the tutors own professional experience.

Requirements	
Effects of pollutants, condensation and under-heating	• Health issues exacerbated by poor air quality • Mould growth • Fabric deterioration.
Factors and risks that contribute to over-heating	• Poor ventilation leading to raised humidity and encouraging mould growth • Poor mechanical water vapour extraction • Large, glazed areas and minimal shading.
Techniques for minimising the risk of over-heating	• Regular ventilation • Curtains and shutters • Shielding • Electronic equipment turned off when not in use and not left on standby.
Factors that affect building fabric airtightness	• Poor build quality • Build restrictions • Ventilators • Construction • Windows/doors and glazing • Floor type.
Concept and **factors** that impact internal air quality	• Meal preparation • Bathing • Poor ventilation • Pets and plants • Dust • VOCs.
Ventilation systems	• MVHR • PIV • Continuous mechanical extract DMEV and CMEV • Intermittent fans.