Centre for Sustainable Energy

Draught & Ventilation Survey

ADDRESS

Assessed by Elliot Clark

DATE

Centre for Sustainable Energy

What is an Airtightness Test?

An **airtightness test** (also known as a **blower door test**) measures how much air leaks into or out of a building through unintentional gaps and cracks in the envelope (walls, roof, floors, doors, windows).

Why it's done:

- **To check energy efficiency** – air leakage = heat loss = higher energy bills.
- **To meet building regulations** – UK law requires that the airtightness for **new build** dwellings must achieve a maximum airtightness score of **8 m³/h·m²** at 50Pa. The lower this score, the more airtight a property is.
- **To detect problem areas** – helps locate specific leaks for sealing and reduce draughts

How it's done:

1. A **blower door** is fitted into an external doorway.
2. The blower door fan is used to pressurize or depressurize the house.
3. The equipment measures how much air escapes at a set pressure (typically 50 Pascals).
4. The result is expressed as:
    - **Air permeability** ($m^3/h \cdot m^2$@50Pa) – how much air leaks per square meter of envelope of the property, per hour.
    - Or **air changes per hour (ACH)** – total volume of air leakage relative to the building's internal volume.

What is considered a good test score?

In the UK, a **good airtightness test result** depends on the type of building and its purpose, but here's a breakdown of what's generally considered "good":

Standard New Homes (Building Regulations – Part L)

- **Target: ≤ 8 m³/h·m² @50Pa**
    - This is the **maximum allowable** for compliance.
    - But most new builds aim for **≤ 5 m³/h·m²**, often around **3–5** to ensure better energy performance.

Better Practice / Energy-Efficient Homes

- **Good Score: ≤ 3 m³/h·m² @50Pa**
    - Common for well-built homes with attention to sealing details.

Passivhaus Retrofit Standard - EnerPHit

- **Excellent Score: ≤ 1.0 ACH @50Pa** *(Note: this is measured differently — by air changes per hour, not air permeability)*
    - Equivalent to around **~1 m³/h·m² or better (approx.)** in UK terms.
    - Very airtight, highly energy-efficient buildings.

Centre for Sustainable Energy

Airtightness test summary

The airtightness test result showed that the property has a score of 11.41 $m^3/h \cdot m^2$ @50Pa. This is good for a mid-terrace property of this size and age that has not had any airtightness works yet, with the average being more like 12-15 $m^3/h \cdot m^2$.

The bulk of the airtightness works to be done on your property is sealing gaps in the plaster (e.g. around the utility window) and sealing around skirting boards. By undertaking all of the airtightness works suggested below, you could see your air permeability score improve by 1-3.

The areas of largest loss, and that are relatively simple to rectify, are around your porch door, your loft hatches and the skirting boards on the southwest party wall. More information can be found in the table of solutions found below.

As mentioned on the day, when it comes to gaps and air leakage paths, the more you look the more you find and anywhere that a plumber, electrician or heating engineer would work that you wouldn't typically go is somewhere to examine.

Centre for Sustainable Energy

Ventilation survey summary

Within building regulations (Approved Document Part F) there are minimum ventilation requirements when it comes to mechanical ventilation and background ventilation. I tested the mechanical ventilation at your property and compared the results with the minimum recommendations.

The levels are measured in litres per second and vary depending on the room they're in. It is always recommended to have mechanical extract ventilation in any 'wet' room (i.e. a room which has a sink or moisture generating appliance). Intermittent Extract Ventilation (IEVs) are the type of ventilation which are turned on manually, or automatically turn on and off with a light switch.

Room	**Minimum extract rate**	**Your property**
Kitchen	**30 L/s** (adjacent to hob) or **60 L/s** elsewhere	**Zero – no extraction ventilation***
Bathroom	**15 L/s**	**Bathroom 1 (mid floor): 9.01 L/s** **Bathroom 2 (top floor): 24.25 L/s**
Utility room	**30 L/s**	**6.11 L/s**
W/C	**6 L/s**	**n/a – no W/C**

*Positive Input Ventilation (PIV) present, see below.

Starting with the kitchen, it would be recommended to install extraction ventilation as the moisture from cooking is currently being pushed into the property by the PIV unit, which may be condensing elsewhere, potentially within the building fabric.

Bathroom 1 does not have a good extraction rate, likely because the extraction pipework is too long up to the roof exit point, as well as possibly being combined with bathroom 2 pipework. The recommendation here is to fit a more powerful unit in bathroom 1, or install a continuous unit. A decentralised mechanical extract vent (dMEV) would easily replace the current IEV, and works continuously at a low speed, until the humidistat detects high humidity, at which point it will boost to similar levels to the bathroom 2 IEV.

A similar unit would be recommended for the utility room. As you increase the airtightness of the property, continuous ventilation is preferred to ensure a constant flow of fresh air and reduced build up of humid air and other pollutants, such as carbon dioxide or Volatile Organic Compounds (VOCs).

Centre for Sustainable Energy

Date: DATE

Prepared for: CLIENT

Property tested: ADDRESS

Air Permeability: 11.41 m³/h·m²

Area	Loft hatches
Description	Loft hatch in bedroom is loose and ill fitting. Loft hatch in hallway is missing.
Solution	A more robust approach would be to install new fitted insulated loft hatches and have these fitted by a professional. Alternatively, you can use self-adhesive foam or rubber draught excluder strips around inside of frame where hatch door closes onto, add a catch or bolt to close the hatch door under tension against the draught excluder strips. Also consider adding insulation to the rear of the hatch, adhering insulation board to reduce heat loss. Fill any gaps around hatch frame with caulk, sealant or plaster as relevant.
Photos	

Area	Sliding Sash Windows
Description	Leakage around window frames, especially in photo 1 where window does not properly close.
Solution	Have window fixed to ensure window can lock with the mechanisms. Use self-adhesive foam or rubber draught excluder strips around inside of frame where window casement closes onto, ensure window catch and stay close the casement firmly under tension against the draught excluder strips.
Photos	

Area	Window frame (head, sill, jambs)
Description	Large gap approx. 50mm², left side of window sill in utility room.
Solution	Fill gap around with expanding foam and seal with an airtight sealant, then finish with plastering and painting.
Photos	

Area	Door casement
Description	Porch door is ill fitting, large gaps between the door and the frame. Front door could be better but the porch door is simpler to improve.
Solution	Use self-adhesive foam or rubber draught excluder strips around inside of frame where door casement closes onto, ensure door handle closes door casement firmly under tension against the draught excluder strips. Brush draught excluder strips can also be added around inner perimeter of frame on the external facing side.
Photos	

Area	Skirting board gaps
Description	Multiple areas of gaps beneath skirting boards drawing air through, particularly on the whole southwest party wall. The pictured skirting board is in the doorway between the kitchen and the hallway.
Solution	For ease, the use flexible rubber insulation gap filler strips of relevant thickness can be fit to suit gap size. For thin gaps a flexible sealant can be used. A better solution is to remove the skirting boards and use airtightness tape against the floorboard-wall junction. Adhere the skirting board back to the wall and seal the gaps with clear silicone.
Photos	

Area	Electrical sockets and light switches
Description	The sockets in the cupboard with the server room have gaps into the intermediate floor void. Electrical sockets, particularly the one in the midfloor rear bedroom and the legacy socket in the kitchen may not be well sealed.
Solution	Fill gap around with expanding foam and seal with an airtight sealant, then finish with plastering and painting. Remove the mounting box and fill gaps behind the casing with expanding foam or airtightness tape, being cautious to not affect the wiring. Fill gaps around mounting box with plaster or airtight sealant.
Photos	

Area	Bath panel
Description	There some sealant missing on the bath panel, service piping behind this may have large gaps around them so it is advisable to remove the panel to address pipework, then re-seal panel.
Solution	Removing the bath panel and sealing around service pipework with airtightness tape or expanding foam, still allowing for maintenance access at key junctions where relevant. Re-sealing bath panel using silicone sealant.
Photos	

Area	Radiator pipes
Description	Hot water cylinder pipework in the cupboard is all exposed (not pictured).
Solution	This would have been left uncovered for maintenance access, so laying over with an easily removable plywood/MDF board, cut to size, would be recommended. Airtightness tape can be used to keep it in place whilst still remaining accessible.
Area	**Cat flap**
Description	Cat flap in kitchen external door is not in use, so can be removed (not pictured).
Solution	Remove the cat flap and cut plywood to size. Seal on one side and fill the cavity with either solid board insulation cut to size or expanding foam. Seal again on the other side, sand and redecorate.

Common areas of air leakage

- Between and around suspended floors
- Around cables which penetrate through walls or the floor
- Beneath doors and door frames
- Around the boiler flue
- Around electrical outlets and switches
- Through windows and window frames
- Around wall-mounted radiators
- Through and around doors
- Around loft hatches or attic access
- Behind kitchen units, and built-in cupboards and wardrobes
- Around waste pipes
- Around supply pipes from gas & electricity meter boxes
- Around roof lights or recessed spotlights
- Around extractor fans, cooker hood vents and tumble dryer vents
- Chimneys, flues and fireplaces
- Along the top and bottom edges of skirting boards or along wall/floor junctions

Futureproof provides impartial advice and expert guidance to help transform homes through energy efficiency upgrades. We help ensure your home improvements give you a more comfortable, low-carbon and cost-effective home.