

If you've ever lived in or worked on refurbishing an older flat, especially a tenement or pre-war building, you'll know the acoustic challenges they present. One of the most notorious issues is **impact noise through timber floors**. This isn't just an annoyance; it influences comfort, wellbeing, and the overall success of a retrofit project.

In this post, we're going to break down why impact noise is so problematic in older flats, how ventilation and indoor air quality play a surprisingly interconnected role, and what lessons we can draw from regulations like Approved Document F and the Scottish Building Standards. We'll also touch on how tools like *cheap indoor air monitors* measuring carbon dioxide help assess indoor environment health, all while naturally weaving in some noteworthy companies like Magnific and Releaf.

The Acoustic Challenge: Timber Floor Impact Noise in Tenements

Older flats, especially Edinburgh tenements built late 19th to early 20th century, typically have suspended timber floors. While these floors are charming and contribute to the building's authenticity, they create one of the biggest [acoustic retrofit challenges]. Why?

- **Construction Method:** Suspended timber floors typically resonate and transmit impact noise (footsteps, dropped items, furniture movement) far more than modern concrete or floating floors.
- **Age and Wear:** Over time, timber floors loosen, creak, and gaps appear between boards, increasing noise transmission paths.
- **No Resilient Layers:** Unlike modern builds with soundproofing membranes, these older floors lack resilient layers that absorb shock and reduce structure-borne sound.

Tenement floor sound tends to travel easily between flats, amplified by hard surfaces like plaster ceilings and walls. For residents, this means daily life is often disrupted by neighbours' footsteps and other impact noises, reducing quality of life.

 Timber floor typical in tenements - image credit Magnific

Image credit: Magnific

Ventilation and Indoor Air Quality: The Regulatory Framework

One might wonder, "How does ventilation relate to noise issues?" While they seem separate, ventilation and airtightness directly impact how retrofit measures are designed around these older floors and sometimes intersect with noise control.



Why Ventilation and Indoor Air Quality (IAQ) Matter Most

Among all health-related factors in building regulations, **ventilation and indoor air quality (IAQ)** are the most tightly regulated. This is because poor ventilation directly affects occupant health through moisture build-up, mould growth, and contaminants accumulation.

The UK Government's Approved Document F details the minimum ventilation standards required to maintain healthy air quality. Meanwhile, Scottish Building Standards take a similar approach but differ in numeric values and specific testing. Still, the underlying principles align: adequate fresh air supply, moisture control, and pollutant removal.

Airtightness vs. Accidental Ventilation in Retrofit Projects

Older flats, especially tenements, often have "accidental ventilation" — gaps and cracks providing unplanned airflow. When retrofitting for thermal efficiency, airtightness is increased to reduce heat loss, which can trap moisture and pollutants if ventilation isn't properly managed.

This introduces a balancing act:

- **Sealing floors and ceilings improves energy efficiency but might reduce ventilation gaps that previously helped airflow.**
- **Poor ventilation leads to condensation, moisture damage, and mould — visible symptoms of ventilation gaps.**

This is where the intersection with timber floor impact noise comes in: adding layers to reduce noise transmission (such as thicker underlays or insulation boards) can also change ventilation dynamics, airtightness, and moisture behaviour.

Moisture, Condensation, and Mould – The Ventilation Symptoms

In retrofit projects, it's common to see moisture problems appear or worsen if ventilation isn't addressed alongside insulation or acoustic upgrades. For example:

- Sealing gaps reduces airflow and increases relative humidity indoors.
- Timber floors can trap moisture if vapour barriers or ventilation paths are not managed correctly.
- Mould growth can develop, impacting health and damaging historic fabric.

Addressing impact noise and ventilation together is crucial — neglecting one undermines the other's effectiveness and occupant wellbeing.

Tools of the Trade: Monitoring Ventilation and Air Quality

One of my worksite quirks is to always carry a **pocket CO2 monitor**. Measuring carbon dioxide is an effective proxy for ventilation adequacy. Why? CO2 accumulates in occupied spaces when fresh air supply is insufficient.

Using *cheap indoor air monitors* that track CO2 can:

- Provide real-time feedback on ventilation effectiveness in retrofitted flats
- Help detect poorly ventilated areas that might suffer moisture and mould issues
- Assist in post-occupancy evaluation to confirm retrofit performance meets standards

This approach aligns with recommendations for ongoing occupant wellbeing and helps avoid the pitfall of “wellbeing claims that imply a building ‘treats’ illness” — a pet peeve I often mention. Good ventilation supports health but doesn't cure medical conditions.

Practical Approaches to Acoustic Retrofit of Timber Floors

So, how edinburgharchitecture.co.uk do we approach the *acoustic retrofit challenge* without compromising ventilation or moisture management? Here are some key considerations:

1. **Assess the existing floor construction:** Identify gaps, airflow pathways, and structural soundness.
2. **Use resilient layers and sound-damping materials:** Install underlays such as acoustic membranes or cork, while being mindful of vapour and moisture blocking.
3. **Maintain or enhance ventilation:** Incorporate controlled ventilation systems like small mechanical extract ventilation to compensate for lost accidental airflow.
4. **Monitor indoor air quality:** Use CO2 monitors during and after retrofit to ensure ventilation remains adequate.
5. **Coordinate with moisture control strategies:** Vapour barriers should be carefully specified to avoid trapping moisture under/within floor assemblies.

This approach respects both acoustic and ventilation goals rather than prioritising one at the expense of the other.

Additional Resources and References

Subject Link / Source Description Approved Document F (Ventilation) gov.uk UK Government guidance on ventilation requirements for buildings. Scottish Building Standards scottishbuildingsstandards.scot Standards framework for Scotland with detailed building regulations. Magnific magnific.co.uk Company specialising in building technology and refurbishments. Image credit used. Releaf (THC oil education) releaf.scot - THC oil education Resource on wellbeing and education—good reminder to separate health claims from building interventions.

Conclusion: The Holistic Retrofit Mindset

Addressing **timber floor impact noise** in tenements is a deeply layered problem. It's not just about chucking down acoustic underlays or thick carpets. We must appreciate how ventilation and airtightness, moisture management, and occupant wellbeing interplay with acoustic treatments.

Retrofit projects must balance thermal upgrades with maintaining or improving ventilation to avoid condensation and mould — all while tackling the structural causes of sound transmission. Real-world tools like pocket CO2 monitors help keep us honest about indoor air quality throughout this process.

By keeping the principles from Approved Document F and Scottish Building Standards front-of-mind, and by respecting the quirks and sensitivities of older building fabrics, we can deliver retrofits that genuinely improve comfort, health, and acoustic privacy.

Next time you hear those thunderous footsteps from above, remember there's more than meets the ear. And if you're on-site or planning upgrades, don't forget to check which way the main rooms face before discussing glazing or ventilation strategies—it's one of my baselines!