



Plasht Road: 62 Passivhaus Dwelling designed by Architect Levitt Berstein

HRV Group

Specialists in Passivhaus MVHR Projects

244

**Passivhaus
Installations**

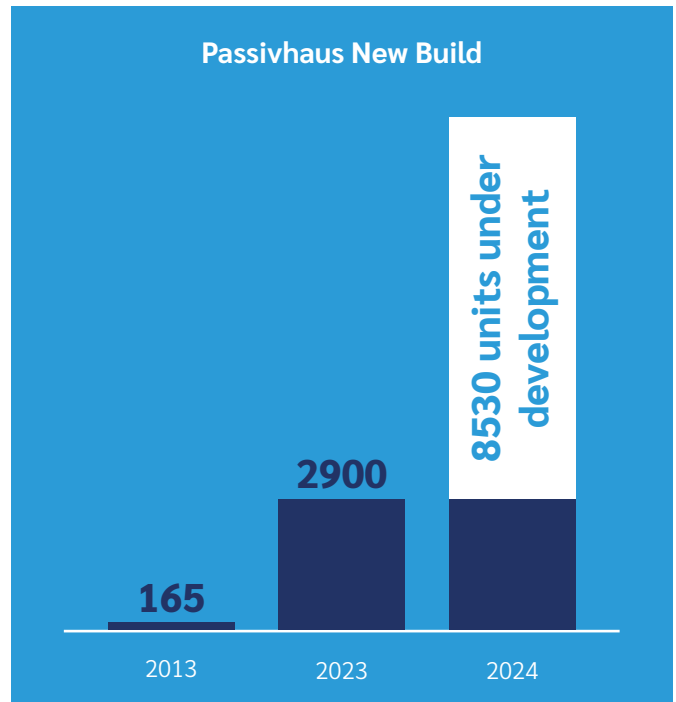
Over the past year, HRV Group has successfully delivered multiple Passivhaus MVHR installations across London, demonstrating a commitment to precision, efficiency, and airtight performance.

Passivhaus

Over the past decade, the UK has increased in the adoption of Passivhaus standards, particularly in larger-scale developments. Passivhaus (or Passive House) is a high-performance building standard that prioritises energy efficiency, comfort, and sustainability.

Developed in Germany, it requires buildings to have extremely low heating and cooling demands, achieved through a combination of super insulation, airtight construction, high-performance windows, thermal bridge-free design, and mechanical ventilation with heat recovery (MVHR).

As of 2023, the UK boasts over 2,900 fully certified Passivhaus buildings, with an additional 8,530 units reported to be under development. This marks a significant rise from a decade ago when there were just 165 completed or under-construction Passivhaus units.



Large Scale Passivhaus

Several prominent developers and local authorities are embracing passivhaus principles in new build developments. More details can be found at **Passivhaus Trust** an independent, non-profit organisation dedicated to promoting the adoption of the Passivhaus standard in the UK. Through education, research, and policy engagement, it supports professionals, policymakers, and the public in achieving ultra-low energy homes and buildings.

Norwich City Council

In 2019, the council pioneered Passivhaus at Goldsmith Street that was the winner of the 2019 Stirling Prize. **93 Passivhaus homes** spread across 7 blocks was 100% social housing and on completion was the UK's largest Passivhaus certified residential scheme.

Camden Council

Implemented Passivhaus standards in multiple housing projects, demonstrating the feasibility of energy efficient design in urban settings. Camden Council has implemented Passivhaus standards in multiple housing projects to demonstrate the feasibility of energy efficient design in urban settings. At Agar Grove, the LA regeneration scheme aims to deliver **314 passivhaus dwellings**.

Newham Council

In addition to Plashet Road (pg 4), the London Borough has 3 other sites for Passivhaus and PHI Low energy buildings and are working towards a total of **400 energy efficient homes**.

Why is Passivhaus Increasing?

Several factors are driving the rise and adoption of Passivhaus standards in larger developments:

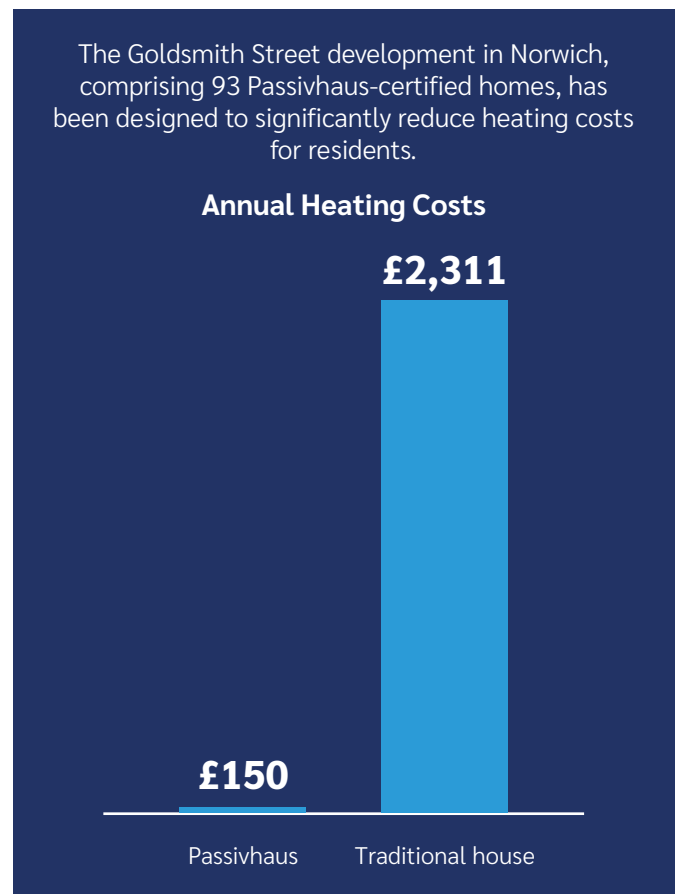
- **Environmental Commitments:** The UK's dedication to reducing greenhouse gas emissions has led to more stringent Building Regulations and a push for sustainable construction practices
- **Economic Incentive:** While initial construction costs for Passivhaus buildings can be higher, the long-term energy savings and potential for reduced utility bills make them economically attractive to both developers and occupants
- **Enhanced Living Standards:** Passivhaus buildings offer superior indoor air quality, consistent temperatures, and reduced energy consumption, leading to healthier and more comfortable living environments

It is anticipated that this trend will continue to gain momentum in the coming years.

Sources:

ggbec.co.uk rightmove.co.uk

*While specific annual heating bills for each household may vary based on individual usage patterns, estimates provide insight into the potential savings achieved through the Passivhaus design.



Passivhaus MVHR

MVHR plays a crucial role by continuously supplying fresh, filtered air while recovering heat from outgoing stale air, significantly reducing energy loss and maintaining a stable indoor climate.



The Passivhaus certification process for MVHR units requires them to meet strict performance and efficiency standards set by the Passivhaus Institute (PHI). Some of the criteria for MVHR units include:

Heat Recovery Efficiency	Must achieve at least 75% heat recovery efficiency
Airtightness	The unit must have a leakage rate of ≤3% to ensure minimal air loss.
Specific Electrical Power (SEP)	The unit must operate with a Specific Fan Power (SFP) of ≤0.45 Wh/m³
Filter Quality	Must include at least F7-class supply air filters to remove fine particulates
Frost Protection	Must have effective frost protection strategies that prevent heat exchanger freezing in cold climates while maintaining efficiency – usually via an integral pre-heater in the MVHR Unit
Duct Connection and Airflow Balance	Must allow for easy airflow balancing , with minimal pressure drops and optimised duct connections to reduce inefficiencies.

Precision Matters: Key Considerations for MVHR Installation in Passivhaus

Achieving true Passivhaus performance requires an unwavering commitment to precision at every stage of the MVHR installation. Even minor flaws in duct sealing, insulation, or airtightness can compromise efficiency, reducing energy savings and indoor air quality.

Key Passivhaus focus:

1. Precision in Thermal Insulation

To maximise heat efficiency, it is crucial to follow consultation specifications for insulation performance and ensure precise wrapping of the ducting when completing it onsite. In Passivhaus projects, insulation plays a vital role in maintaining the temperature of pre-heated or cooled air, minimising energy loss, and ensuring year-round indoor comfort. Properly insulated and wrapped ductwork prevents thermal bridging, enhances system efficiency, and supports the airtightness required for optimal performance.

2. Secure Installation

In Passivhaus installations, it is important to use strap banding techniques to fasten ductwork without compressing the insulation, preventing thermal bridging and maintaining integrity.

3. Eliminating Air Leakage

Passivhaus airflow rates are higher than standard Building Regulations - calculated specifically for each project.

With increased rates, eliminating air leakage through high quality duct joints is absolutely essential. Using a best practice approach to connecting ducting with sealant, tech screws and taping all 4 sides is essential.

4. Airtight Penetrations

To maintain the critical airtightness required for Passivhaus certification, all external penetrations should be sealed with absolute precision.

Grommets are used to provide an airtight and durable seal where ductwork exits the building, eliminating unwanted air leakage and preserving system efficiency.

5. Optimising External Duct Runs

Shortening external duct runs minimises energy loss and exposure to external temperature fluctuations. By carefully positioning the MVHR unit and optimising duct layouts, you can reduce unnecessary thermal exchange, ensuring that the system operates at peak efficiency.



Our Expertise with Passivhaus Installation:

The key to success lies in meticulous attention to detail. Eliminating air leakage is not just a best practise, it is an absolute requirement.

Our key insights gained from experience with Passivhaus MVHR installations include;

Team Training – Understand the precision and airtightness requirements unique to Passivhaus

Site Preparation – Early planning for onsite practises and co-ordinations with other services

Collaboration – Close coordination with architects and consultants to ensure installed performance can be achieved with their design

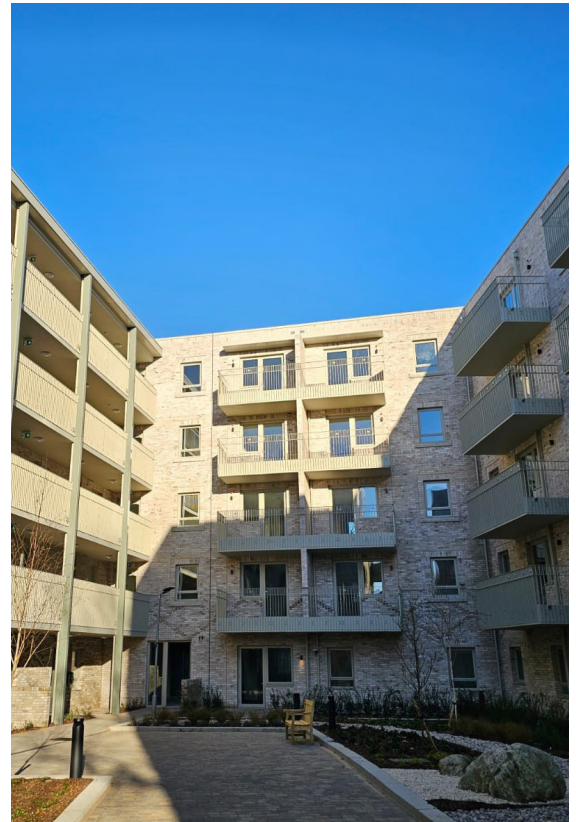
Our Experience - Passivhaus Projects

Plashet Road Passivhaus Development Delivering High-Performance MVHR Systems

The Plashet Road Passivhaus development designed by Architect Levitt Bernstein, is a landmark project in East London, providing high-quality, energy-efficient homes in a well-connected and vibrant area. **Comprising 62 new dwellings, this development is designed to meet the rigorous Passivhaus standard**, ensuring outstanding energy performance, superior indoor air quality, and long-term sustainability.

HRV Group played a crucial role in this project, delivering the full installation of 62 Passivhaus-certified MVHR units. Our work encompassed the entire process, from the initial setup to the final commissioning and sign-off, ensuring every system operates at peak efficiency.

MVHR Unit: Envirovent EnergiSava Passivhaus Accredited
Ducting: Ubbink Air Excellence Semi Rigid Ducting



Hartopp & Lannoy Point Passivhaus Development – A New Standard in Sustainable Living

The Hartopp & Lannoy Point Passivhaus development is a pioneering project in West London, designed to deliver high-performance, energy-efficient homes that meet the highest standards of sustainability. **This landmark development consists of 134 new dwellings, all constructed to Passivhaus certification standards**, ensuring exceptional indoor air quality, thermal comfort, and significantly reduced energy consumption.

HRV Group played a vital role in this large-scale project, providing full installation of 134 Passivhaus-certified MVHR units. Our comprehensive scope of work included the complete ductwork system, first fix, second fix, and final commissioning to ensure each unit was optimized for airtightness and efficiency.

MVHR Unit: Zehnder ComforAir Q Passivhaus Accredited
Cooling Unit: Zehnder ComfoClima
Ducting: Domus Rigid PVC Ductwork



Burgoynes Depot Passivhaus Development – A Benchmark for Energy Efficiency

The Burgoynes Depot Passivhaus development is an ambitious residential project designed to set new standards in sustainable living. Located in a well-connected area, **this development consists of 48 highly energy-efficient dwellings, all built to the rigorous Passivhaus standard.** With a focus on reducing carbon footprints and improving indoor comfort, Burgoynes Depot provides residents with superior air quality and dramatically reduced energy costs.



HRV Group was a key partner in this development, delivering the full installation of 48 Passivhaus-certified MVHR units. Our scope of work included complete ductwork installation, first fix, second fix, and final commissioning, ensuring that every system met the exacting standards required for Passivhaus certification.

MVHR Unit: Zehnder ComforAir Q Passivhaus Accredited
Ducting: Domus Rigid Ducting

Passivhaus Accredited MVHR Units

Through our experience working on new build Passivhaus developments, we have worked with market leading brands including Zehnder and Envirovent. A growing list of Passivhaus accredited units are available offering a range of performances:



Zehnder ComforAir Q

- 3 models
- Up to 96% Heat Recovery Efficiency
- Suitable for homes 250-350m²
- Low noise levels 28 dB(A) @3m across range
- Integrated bypass and pre-heater

Envirovent Energisava

- 2 models
- Up to 89% Heat Recovery Efficiency
- Suitable for homes 125m² - 275m²
- Low noise levels 44 - 48 dB(A)
- Integrated bypass and pre heater

Ubbink Vigor

- 5 models
- Up to 92% Heat Recovery Efficiency
- Suitable for homes 125m² - 325m²
- Low noise levels 39 - 54 dB(A)
- Integrated bypass and pre heater

Vent Axia Econiq

- 3 models
- Up to 86% Heat Recovery Efficiency
- Suitable for homes 150m² - 300m²
- Low noise levels 15.5 dB(A) at 3m
- Integrated bypass and pre-heater

Regular maintenance of an MVHR system is essential in a Passivhaus building.

Poorly maintained MVHR systems can lead to reduced efficiency, increased energy consumption, and compromised air quality, **negating the benefits of a Passivhaus approach**. Additionally, as the MVHR system is crucial to maintaining a healthy indoor environment, failure to maintain it properly can result in poor air circulation, increased humidity, and discomfort for occupants.

Essential MVHR Maintenance for Passivhaus Systems:

1. Filter Replacement

- Frequency: Every 3–6 months
- Filters trap dust, pollen, and pollutants; clogged filters reduce airflow and system efficiency
- Use Passivhaus-grade filters (F7) for supply air for optimal performance

2. Heat Exchanger Cleaning

- Frequency: Annually
- A clean heat exchanger maintains effective heat recovery and prevents efficiency losses

3. Fan and Motor Check

- Frequency: Annually
- Dust, debris and grease accumulation can strain the motor and reduce efficiency
- Listen for unusual noises that may indicate motor wear or blockages

4. Air Supply and Extract Grilles

- Frequency: Every 3–6 months
- Dust accumulation can impact airflow and system balance

5. Duct Inspection

- Frequency: Up to 5 Years
- Over time, dust and debris can accumulate in ducts, affecting airflow and air quality
- Professional duct cleaning may be required every 3–5 years, depending on usage

If you are looking at Passivhaus for a new development or looking to maintain important systems in existing homes - please speak to us on **033 023 4180** or email **enquiries@hrv-group.com**



Professional Servicing

While homeowners can perform basic maintenance, a professional MVHR service every year is highly recommended. As well as maintaining the key parts, the service will also include inspections and system rebalancing, to ensure the system remains fully functional.