# Collective Works Transforms North London Terrace House into Low-Carbon, Low-Energy Home



**Collective Works Completes Deep Retrofit of North London Terrace House**

*July 5, 2024, North London* – Architecture firm Collective Works has completed a significant retrofit project titled "Mid Terrace Dream," transforming a run-down early 1900s terrace house into a low-carbon, low-energy home. The project aims to create a healthy living space for a young couple and their newborn child.

The retrofit began in February 2023 and was completed in September 2023. The house, originally 90m², now includes 60m² of extensions, incorporating a large ground-floor garden extension and a full loft dormer. The transformation followed a circular approach to demolition, retaining as much of the original structure as possible, and utilized recycled materials such as seasoned timber studs and bricks from the demolished rear wall.

For improved thermal performance and energy efficiency, Passivhaus design principles were applied. Measures included hyper-insulating the building’s envelope, installing high-performance triple-glazed windows, and employing renewable energy technologies like rooftop photovoltaic panels (PVs), an air-source heat pump, and a mechanical ventilation with heat recovery (MVHR) system. The enhancements have resulted in an airtight construction achieving a U-value of 1.8m³/(h·m²) at 50Pa, significantly better than current building regulations.

Internally, the design incorporated natural, healthy materials. The kitchen and dining area facing the garden features a double-pitched sawtooth roof and a distinctive red dormer. Interior finishes include low-VOC paint, wool insulation, and exposed timber, along with natural stone and textured tiles, chosen to reflect the clients’ Scandinavian and Mediterranean heritage.

The project has garnered an EPC rating of B, expected to improve to A with renewable technologies. Early estimates indicate very low energy use at less than 20kWh/m²/year, pending verification through post-occupancy evaluation.

Collective Works collaborated with structural engineer Matter, M&E consultant Next Step Heating/Green Building Store, and main contractor Oasis Construction. The retrofit project underscores the synergy between ambitious clients and a dedicated architectural team to achieve a sustainable and comfortable living environment.

**Project Data:**
- *Start on Site*: Feb 2023
- *Completion Date*: Sept 2023
- *Gross Internal Floor Area*: 150m²
- *Architect*: Collective Works
- *Main Contractor*: Oasis Construction
- *Structural Engineer*: Matter
- *M&E Consultant*: Next Step Heating / Green Building Store

**Environmental Performance:**
- *On-site Energy Generation*: 101%
- *Airtightness at 50Pa*: 1.8m³/h.m²
- *Heating and Hot Water Load*: 7.5kWh/m²/year
- *Overall Area-Weighted U-value*: 0.23W/m²K
- *Design Life*: 60 years
- *Embodied/Whole-life Carbon*: 321kgCO₂eq/m²
- *Annual CO₂ Emissions*: 0.855kgCO₂eq/m²