

Case Study 3

HOW TO FUTURE-PROOF YOUR DULWICH HOME

Why Retrofitting Matters

Dulwich housing stock includes Victorian terraces, Edwardian semis, 1930s homes, and post-war infill—many of which were built long before modern insulation standards. As a result, they often lose heat quickly and rely on carbon-intensive heating systems. Retrofitting these homes is one of the most effective ways to support local climate goals while reducing energy bills.

Our Mission

The goal of this series of retro-fit case studies, is to empower Dulwich residents with clear, trustworthy information to help:

- Reduce household energy use
- Lower carbon emissions
- Improve comfort and indoor air quality
- Protect the character of local homes
- Make informed decisions about retrofit investments
- Navigate Scheme of Management and Local Authority planning rules



Renovated Edwardian Estate house

Case Study 3

HOW TO FUTUREPROOF YOUR EDWARDIAN ESTATE HOME

This early example of sustainable retrofit transformed a cold, damp house into a warm and efficient family home.

Energy saving impacts:

- *Early example of fabric-first retrofit proven over 14 years*
- *Renewables integrated with minimal disruption*
- *Cold, damp house transformed into a warm, dry family home*



Pre-renovation view

BACKGROUND

This semi-detached Edwardian home was built in 1909 and is in the Dulwich Village Conservation Area. Before works began, the house was cold and draughty and suffered from serious damp. In 2011 the owners commissioned a retrofit project combining a new rear extension with whole-house environmental upgrades to improve thermal comfort and energy efficiency.

The extension exceeded the thermal requirements of the building regulations with high levels of insulation, insulated glazing and a green roof. Meanwhile, the existing house fabric was conserved and repaired to improve comfort without impacting the property's architectural character.

SUSTAINABILITY OBJECTIVES

The overall goal was to deliver long-term comfort and reduce running costs while complying with The Dulwich Estate Scheme of Management guidelines. The project created a bright, modern kitchen and living space opening up the house to the garden.

Taking a 'fabric-first' approach, the original house was largely conserved with damp and water leaks being addressed, insulation added internally and windows were replaced throughout to reduced draughts. Solar thermal panels installed on the main roof reduced reliance on fossil fuels. The extension has a sedum green roof which has enhanced biodiversity and reduced rainwater run-off while blending in with the garden setting.



The extension roof was designed to be planted with sedum, which reduces rainwater run-off, supports insects and looks much more interesting than a bare roof.



A Solar Thermal Collector is made up of glass tubes with a vacuum to capture the sun's heat and transfer it to provide hot water.

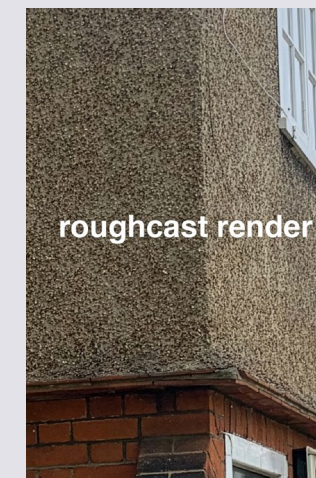
Image courtesy of Viessmann

TECHNICAL STRATEGY

The technical approach combined targeted conservation with modern sustainability measures. External defects in the roughcast render, walls and rainwater goods were repaired. A chemical DPC was installed where required by a specialist, and sub-floor ventilation was improved to protect timber floors. Internal wall insulation (IWI) was added to the solid brick walls. A 44mm insulated plasterboard was used, following a condensation risk analysis by a specialist. Though thinner than standard IWI (50–100mm), this delivered energy benefits at lower cost and disruption. Sustainable Rockwool was also installed in the loft and ground floor.

Adding internal wall insulation necessitated deeper interior sills and therefore, at the same time all windows were upgraded with double-glazed sashes made from timber from sustainable forests. Matching the original sash window frames preserved the historic character of the house. The large, glazed areas in the rear ground level extension used specialist double glazing with an insulating interlayer.

The heating system was a hybrid combining a Viessmann gas boiler with a solar thermal and hot water cylinder system. MVHR was considered but rejected due to the disruption involved in the installation of ducts. Instead, passive ventilation was adopted, including a large skylight positioned above the stairwell with a temperature-controlled opening mechanism. This promotes natural air circulation through the house and provides passive cooling during the summer months.



More About: Roughcast Render

Roughcast render, sometimes called rough coat or pebbledash, is a traditional textured wall finish used for centuries and common on Victorian, Edwardian and inter-war homes across Dulwich. Its distinctive surface is created by mixing small stone aggregates into the render, giving a durable, weather-resistant coating. Beyond its visual character, roughcast provides effective protection against rain penetration and is well suited to solid brick wall construction. Traditional lime-based roughcast is also vapour-permeable, allowing moisture to escape and helping to keep walls dry.

When repairs are needed, homeowners should use a contractor experienced in lime render and ensure any new work matches the original texture and composition. Prompt maintenance prevents water ingress, preserves appearance, and protects the long-term health of the building fabric.

PROJECT ACHIEVEMENTS

The retrofit made the home significantly more comfortable, efficient, and climate resilient. The solar thermal installation has been running successfully for over 14 years, reducing gas use and energy bills and achieving a payback several years ago.

Conservation-led repair strategies extended the life of original materials and avoided waste. Repairs to damp-affected walls, render, and rainwater goods, combined with better sub-floor ventilation, resolved long-standing moisture issues. Instead of wholesale replacement of rotten floor joists, targeted in-situ repairs were carried out and rot treatments applied, which reduced disruption, cost and preserved embodied carbon.

The project benefited from the technical experience of the architect. Challenges included damp remediation which required specialist input, and these works had to be coordinated around existing services. Careful project planning was required to minimise disruption. In some areas, high external ground levels still limit DPC clearance, requiring ongoing monitoring. The house retains its period character while functioning as a warm, dry, sustainable family home.

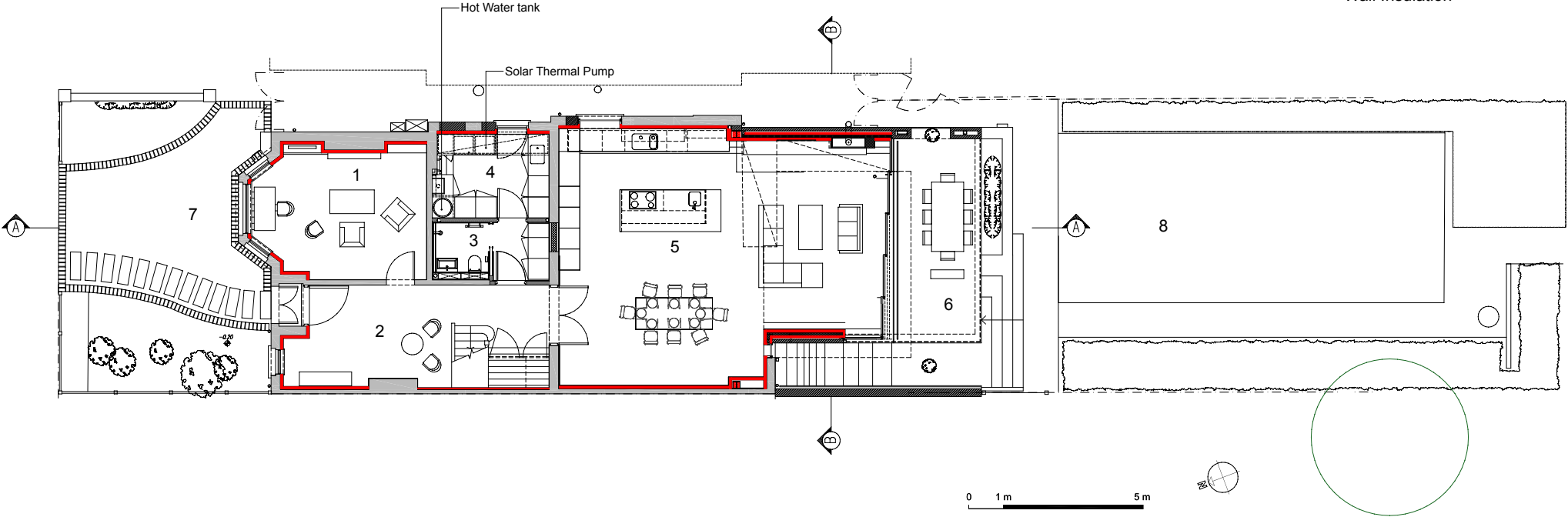


Damp proof course example at the base of a brick wall

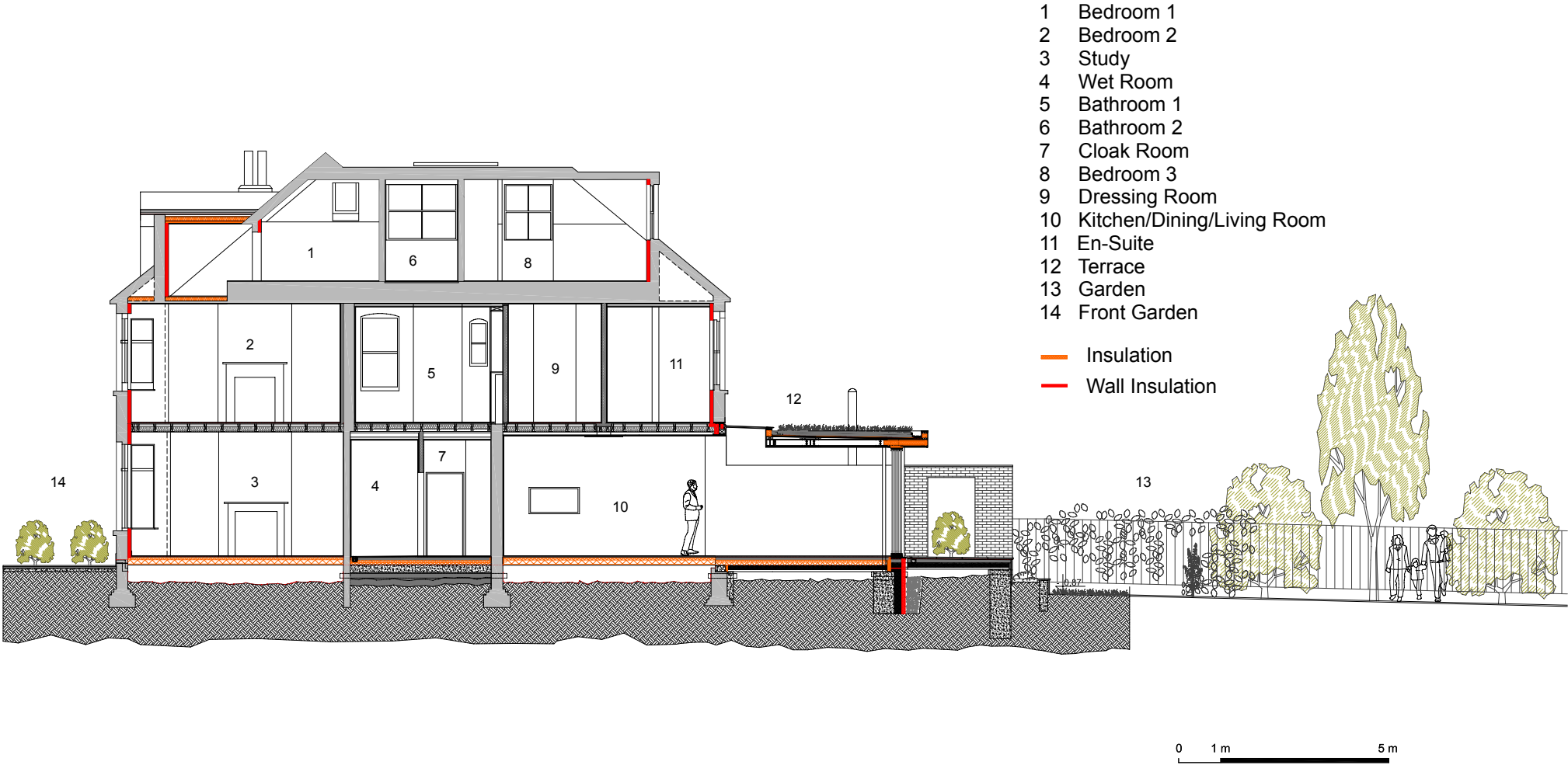
More About: Damp Proofing

A damp proof course (DPC) is a horizontal barrier built into a wall, about 150 mm above ground level, to stop moisture rising through capillary action and causing damp. Early buildings relied on thick, breathable walls and good ventilation, but from the mid-nineteenth century materials such as slate, lead and asphalt were used, and a DPC became a legal requirement by the 1880s. Modern homes use bitumen or plastic systems, while older properties may have a chemical DPC injected into the wall. This can be effective, but damp may also be caused by defects such as poor ventilation, leaking gutters, or high ground levels. For this reason, technical advice from a qualified installer is essential to ensure the underlying cause of damp is correctly identified and treated.

- 1 Study
- 2 Lobby
- 3 Wet Room
- 4 Utility room
- 5 Kitchen/Dining/Living Room
- 6 Terrace
- 7 Front Garden
- 8 Garden
- Wall Insulation



Ground floor plan



Cross Section

LESSONS LEARNED

This project demonstrates how character can be conserved while sensitively integrating modern environmental technologies. In projects of this nature, managing moisture is paramount, not only from the ground and weather, but also internal water vapour from everyday household activities. A typical household generates 12 to 14 litres of water vapour each day. Here, early investment in detailed surveys, specialist advice, and a well-designed ventilation strategy ensured that moisture issues were resolved effectively. A “repair rather than replace” approach further reduced waste, retained embodied carbon, and safeguarded the building’s fabric.

The early adoption of solar thermal technologies is an example of how renewables can be sensitively integrated into a period property. For the homeowners, the retrofit transformed daily living, *“The space has opened up... It’s cheaper to run.”* The architect observes that *‘PV panels and triple glazing would now be specified, reflecting advances since the project. Lessons we learned here informed more comprehensive retrofit strategies in later projects.’*

SUMMARY OF RETROFIT IMPROVEMENTS

Element	
Floors	Timber joists repaired; sub-floor ventilation improved; floor insulated.
Walls	Damp proofing via repaired plinths, chemical DPC, and breathable insulated plasterboard.
Windows	Double glazed replacements to match the original sash windows to the front and rear.
Roof	Existing structure retained and insulation added.
Extension	High levels of insulation; green sedum roof.
Renewables/ heating system	Solar thermal tubes supplement the Viessmann gas boiler and hot water system.
Lighting/ appliances	Low-energy lighting and efficient appliances.

TOP TIPS

- At the start of your project investigate any damp problems first, commissioning a specialist survey.
- Check whether any ground level vents or wall vents have been blocked up. Ventilation is vital.
- Use a suitably qualified and accredited contractor for damp remediation and insulation works. They should provide a guarantee for the product and workmanship, but an Insurance Backed Guarantee is also recommended.
- Retain and repair original materials where possible. For example, in situ timber repairs reduce waste, cost and embodied carbon.
- Check the life expectancy and durability of replacement double windows.
- Plan for maintenance. Providing access panels and safety measures for cleaning and maintenance of solar panels and green roofs.
- Consider biodiversity, and drought resistance when planting gardens and roof gardens.

FURTHER GUIDANCE

RDA Architects
rdauk.com

For advice on insulation visit
energysavingtrust.org.uk

The Property Care Association has a directory
property-care.org

Renewable Energy guidance
renewableenergyhub.co.uk

Solar thermal installation advice
viessmann-direct.co.uk

The Royal Horticultural Society
guidance on green roof installations see
rhs.org.uk