

## Case Study 6

# 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



The front door and windows have been replaced with thermally efficient products

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## Case Study 6

# HOW TO FUTUREPROOF YOUR 1960s ESTATE HOME

*A sensitive mid-century retrofit transforming a 1960s house into an accessible, low-energy Lifetime Home that balances comfort, sustainability, and bright modern design.*

### Energy saving impacts:

- *Low-energy home designed to support ageing in place*
- *High levels of insulation, controlled ventilation and solar panels*
- *Modern energy efficient living that respects mid-century character*



*Before the works commenced. The new side extension is not visible from the street*

## BACKGROUND

This detached two-storey property forms part of a group development designed by Austin Vernon & Partners and built by Wates in 1960. Although not within a conservation area, it is protected under the Scheme of Management, which protects the mid-century character of the area.

One of three standard house types, it features red-brown brickwork, white-painted horizontal weatherboards to the front, tile cladding to the rear, and a clay tiled roof. Typical of its period, the design prioritised light, simplicity, and connection to the garden. Though well maintained, the house required sensitive adaptation to support ageing in place and to meet contemporary living standards.

# SUSTAINABILITY OBJECTIVES

The project's primary aim was to create a Lifetime Home meaning a flexible, accessible environment that would allow the owner to remain comfortably in their home for years to come.

The design avoided institutional aesthetics, instead favouring daylit, open spaces and a calm, white interior reflecting the owner's personal style. A new ground-floor shower room and side extension improved accessibility and flow, while the kitchen-dining space was reconfigured to include a living area overlooking the garden terrace. As the project evolved, sustainability became integral, with low-impact materials, high insulation levels, and later, solar panels were installed to reduce energy consumption.



View into the light-filled extension

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## TECHNICAL STRATEGY

The project initially explored a two-storey extension with a lift, but this was refined to a single-storey design to lessen streetscape impact and comply with Scheme of Management guidelines.

Replacing the former laundry room and courtyard, the extension provides an accessible entrance, utility space and a larger dining area, all shaped by Lifetime Home principles. It was built to a high sustainability standard, using a ReadyTherm+ insulated beam-and-block floor, timber-frame walls with wood fibre insulation and salvaged bricks used as the outer leaf. Airtightness tapes sealed junctions, the timber roof was heavily insulated, and an Aereco demand-controlled ventilation system improves air quality. A future lift location and a ground-floor accessible bathroom ensure long-term adaptability.



A thermal image survey shows heat loss through the lintel



The kitchen before renovations



The kitchen after renovations

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# PROJECT ACHIEVEMENTS

The project successfully transformed a mid-century house into an elegant, low-energy home with accessibility underpinning the design. Key sustainability measures included in-line solar panels on the main roof, compliant with Scheme of Management requirements, and high-performance insulation to minimise heat loss. A triple-glazed Velux rooflight introduces soft daylight into the extension, enhancing comfort and creating a calm atmosphere.

Lifetime Homes principles are about designing for adaptability, enabling people to stay in their homes safely and comfortably as their needs change, reducing the need for major alterations or relocation. Accessibility was improved through thoughtful interventions: a step-free side entrance provides direct access to the new utility area, while the front door was replaced to match the original modernist aesthetic and now includes a handrail and improved threshold design. The reconfigured ground-floor layout enhances spatial flow, linking kitchen, dining, and terrace areas to create a sociable heart of the home.

Original materials were reused wherever possible, while the project supported skills development for local contractors, introducing them to low-carbon timber and insulation systems. Post-occupancy feedback reported significant improvements in air quality, thermal comfort, and energy efficiency, alongside a strong sense of wellbeing and connection to the garden.

The architect's detailed Stage 4 design enabled a high-quality tender process, ensuring clarity and cost control during construction. The completed home demonstrates how the principles of accessibility, sustainability, and timeless modern design can coexist while maintaining the Estate's architectural character and meeting the Scheme of Management Guidelines.



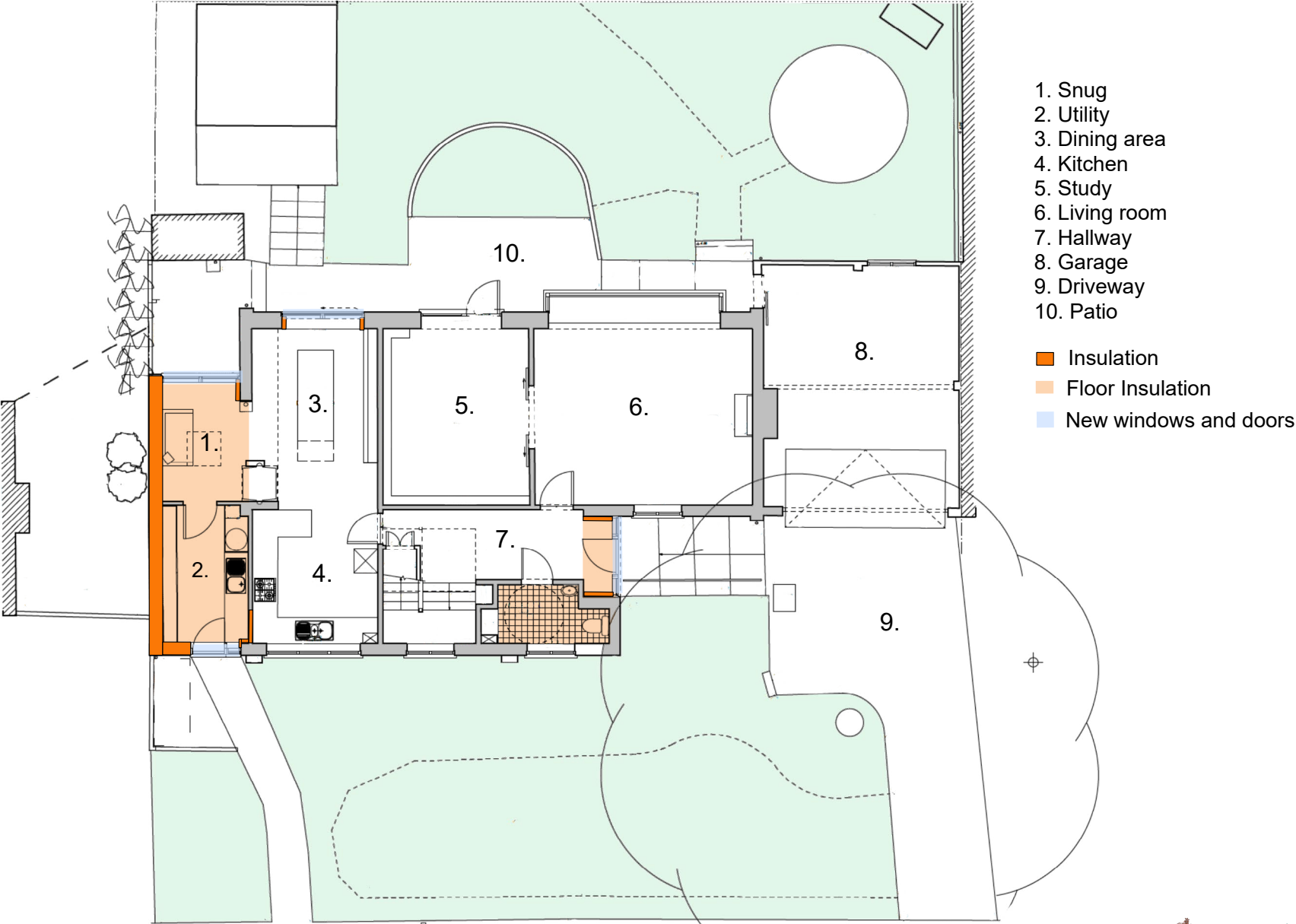
## More About: Floor Construction

The choice of floor type significantly affects both energy efficiency and carbon footprint. Traditional solid concrete slabs are durable but have high embodied carbon and can be difficult to retrofit, often trapping ground moisture. There are a number of more environmentally beneficial alternatives.

Where site conditions permit, the lowest-carbon option is a suspended timber floor with joists supported on screw piles and insulated with wood fibre insulation. Together, these floor types provide effective and sustainable solutions for both new-build and retrofit projects.

A modern option used here was the ReadyTherm+ insulated beam-and-block system, which used precast concrete beams with precut insulation panels fixed between the joists to form the floor structure.

A different system was used at the front entrance, incorporating a Glaspor® recycled glass aggregate beneath a Tŷ-Mawr Sublime® Insulated Limecrete Floor. This insulation, made from recycled glass, does not wick moisture, reducing the need for a damp-proof membrane.



Ground floor plan

## LESSONS LEARNED

A significant achievement was supporting the contractor to adopt low-carbon construction methods, including timber-frame construction, wood fibre insulation and enhanced airtightness systems. Regular site inspections by the architect were essential to guide these unfamiliar techniques and ensure quality. Although a full airtightness test was not undertaken, because the works covered only part of the house, airtightness tapes were applied at all new junctions in line with supplier guidance. Infrared surveys undertaken before the works showed that, despite its 1960s construction, the existing house performed reasonably well thermally. Post-completion surveys confirmed excellent efficiency in the new build elements but revealed unexpected heat loss through the high-specification aluminium windows and doors, despite their triple glazing. For future projects, the architect recommends selecting products certified to Passivhaus airtightness standards to guarantee consistently high performance.

The owner reflected, *“The project has transformed my Dulwich house into a true lifetime home. The design solutions and choice of materials have created spaces that work beautifully for me while also respecting the wider environment.”*



### More About: Wood fibre insulation

Insulation plays a key role in improving energy efficiency and reducing carbon emissions, but the choice of material affects both environmental impact and building health. Traditional petrochemical products such as PIR (polyisocyanurate) have high thermal performance but also high embodied carbon and limited breathability. In contrast, vapour-open systems allow moisture to move through the building fabric, helping walls to absorb moisture and to dry out while remaining airtight and warm.

Wood fibre insulation is an example combining thermal and acoustic performance with carbon sequestration and moisture permeability. Suitable for both traditional and modern properties, it offers an effective retrofit solution that maintains a balance between airtightness and moisture management, essential for long-term building health.

Wood fibre insulation should not be installed below DPC level as it would rot, and specialist advice is strongly recommended. Other natural options to consider include cork, hemp and cellulose.

# SUMMARY OF RETROFIT IMPROVEMENTS

Element	Before	After	U-Value / Performance
Floors- Porch enclosure	External area	Glaspur® recycled glass aggregate beneath a Tÿ-Mawr Sublime® Insulated Limecrete Floor	0.47 W/m <sup>2</sup> K
Floors	Old laundry/external area	Beam and block floor	0.216 W/m <sup>2</sup> K
Walls (below DPC)	Old laundry/external area	-	0.173 W/m <sup>2</sup> K
Walls	Old laundry/external area	Timber frame with wood fibre	0.228 W/m <sup>2</sup> K
Windows	Existing window /door openings + extension	Wood/aluminium windows	0.82 W/m <sup>2</sup> K
Roof	Old laundry/external area	Timber frame with wood fibre	0.15 W/m <sup>2</sup> K
Draughtproofing	-	New windows and doors were sealed	-
Heating	-	Retaining the existing boiler to the end of its life span	-
Renewables	-	Solar panels to the main roof	-
Materials	-	Bricks and paving slabs were recycled	-
Lighting/ appliances	-	Low energy lighting LED and efficient appliances	-



Roof-integrated solar panels to the rear roof

## TOP TIPS

- Consider accessibility as part of any design. Designing for people's mobility needs is inclusive and can avoid future adaptations that produce waste.
- Consider using breathable, natural insulation. Wood fibre and similar materials balance airtightness with moisture control, helping to reduce heat loss through draughts and prevent condensation and mould. Seek professional advice on the details.
- Reuse existing materials. Salvaging original brickwork or joinery preserves character and reduces embodied carbon.
- Improve air quality. Controlled ventilation systems can automatically adjust airflow based on humidity and occupancy. For this project the manufacturer installed and commissioned the ventilation system, guaranteeing the system.
- Coordinate detailing. Airtightness relies on precise design of details and foreseeing the sequencing of the building process. Your architect can design and plan this for you and work with your builders to avoid performance gaps.
- Integrate renewable energy discreetly. In-line solar panels or roof-integrated systems are less visually impactful and the layout should meet the Estate guidelines.

## FURTHER GUIDANCE

Enbee Architecture and Design  
[enbeearchitectureanddesign.com](http://enbeearchitectureanddesign.com)

Airtight sealing tapes, further information see  
[ecologicalbuildingsystems.com](http://ecologicalbuildingsystems.com)

Demand controlled ventilation system, see  
[aereco.co.uk](http://aereco.co.uk)

Insulated beam and block floor systems:  
[cemex.co.uk](http://cemex.co.uk)

Limecrete floor systems: Tŷ-Mawr Lime  
[lime.org.uk](http://lime.org.uk)