

## Case study 4

## Pinfold Lane, Walsall

## Archetype

Post-1945 low rise flats

## Landlord

Wolverhampton Homes

## Description

The Pinfold Lane properties form part of a series of flats and houses built using the 'Mactrad' timber frame system between 1996 and 1971 (as described in BRE report 284). The flats are one bedroom with a typical floor area of 40m<sup>2</sup>.

The properties have shallow pitched roofs and external walls clad with brick and timber tiles. The walls and roof have a thin layer of mineral fibre insulation. The floors are concrete screed on a slab.

The properties have electric heating systems throughout, with immersion hot water tanks and economy 7 radiators. The windows were replaced in 1999.



## Improvements to date

Double glazed uPVC windows (without coating or gas fill), 1999

## Schedule improvements

Re-roofing, 2010

Kitchens, bathrooms and electric rewiring, 2011/12

## Performance analysis

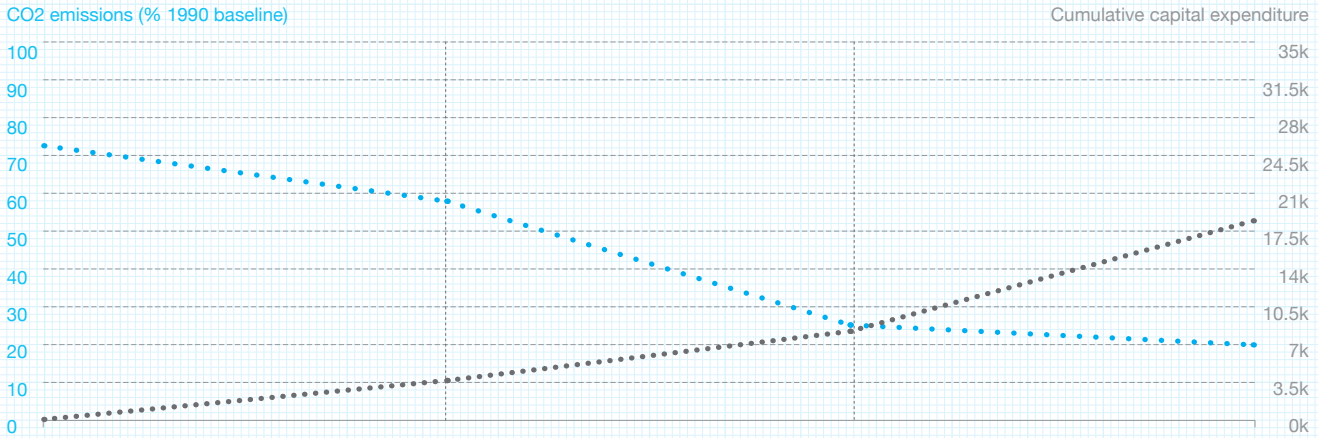
Capital cost	£24,474.16
by floor area	£582.72/m <sup>2</sup>

Performance metrics	1990	2009	2025
SAP rating	23 (F)	53 (E)	86 (B)
Fuel cost	£726.61	£430.73	£178.63
CO <sub>2</sub> emissions	5.1	4.0	1.1
% reduction	- 0%	-22%	-79%

Fabric U-Values	Baseline 1990		As of 2009		Target 2025	
	U Value W/m <sup>2</sup> K	Heat loss W/m	U Value W/m <sup>2</sup> K	Heat loss W/m	U Value W/m <sup>2</sup> K	Heat loss W/m
Windows	4.0	45.7	2.4	26.8	0.7	8.0
Doors	3.0	5.4	3.0	5.4	1.2	2.2
Floor	0.7	29.4	0.7	29.4	0.7	29.4
Walls	0.9	25.2	0.9	25.2	0.2	5.3
Roof	0.8	14.9	0.6	10.6	0.2	3.4

Energy and CO <sub>2</sub> emissions	kWh	CO <sub>2</sub> (tonnes)	kWh	CO <sub>2</sub> (tonnes)	kWh	CO <sub>2</sub> (tonnes)
Space heating	8,111	3.4	5,721	2.4	2,143	0.4
Hot water	2,471	1.0	2,471	1.0	1,098	0.2
Electricity	1,593	0.7	1,350	0.6	1,030	0.4

## Timeline for future investment



	Phase 1 (2010 - 2015)	Phase 2 (2016 - 2020)	Phase 3 (2021 – 2030)
1. Fabric performance	<p><b>Re-roofing:</b> Installation of loft insulation (to 350mm);</p> <p><b>Doors:</b> Solid timber panel insulated doors;</p>	<p><b>Walls:</b> Insitu re-build of timber stud walls with masonite cassettes/panels to be filled with cellulose insulation (150mm) and incorporating replacement windows;</p> <p><b>Glazing:</b> Replacement of existing frames and glazing units with high performance triple glazing;</p>	<p><b>Floors:</b> Installation of insulated timber flooring (10mm insulation, 25mm overall) over existing concrete ground floor;</p>
2. Fit out	<p><b>Water fittings:</b> Replacement spray taps and/or flow restrictors, low flow shower heads as part of kitchen/bathroom works;</p> <p><b>Appliances:</b> A+ rated washing machines and fridge/freezers as part of kitchen works (subject to tenant agreement);</p> <p><b>Lighting:</b> Switchover to compact fluorescent (subject to tenant agreement);</p>		<p><b>Communal solar thermal:</b> Evacuated tube and/or high performance flat plate collectors supplying communal hot water accumulator tank and backup condensing gas boiler, located within a dedicated outhouse, supplying heat via insulated heat distribution mains and risers;</p> <p><b>Wet space heating systems:</b> Installation of new wet radiator systems and risers within each block to replace electric storage heaters;</p>
3. Energy supply			<p><b>Communal solar thermal:</b> Evacuated tube and/or high performance flat plate collectors supplying communal hot water accumulator tank and backup condensing gas boiler, located within a dedicated outhouse, supplying heat via insulated heat distribution mains and risers;</p> <p><b>Wet space heating systems:</b> Installation of new wet radiator systems and risers within each block to replace electric storage heaters;</p>
4. Monitoring			<p><b>Heat metering:</b> Remotely read heat and power metering to bill for solar heat, and provide household access to energy use data;</p>