

Case study 5

Cophall Street, Sandwell

Archetype

Semi-detached house
(non-traditional construction)

Landlord

Sandwell Homes



Description

The semi-detached homes on Cophall street were constructed between 1945 and 1955 using the 'Smiths' prefabricated system (as described in BRE report 37), with external load bearing walls constructed from prefabricated concrete panels with a brick slip facing. They have three bedrooms and have a typical floor area of 82m².

The nature of the construction system has meant there have been problems with differential movement due to poor fitting of the panels and decay of the steel reinforcement system. The properties also have very poor airtightness and are prone to water penetration.

The properties have had a limited amount of improvement work carried out, pending a decision on how/whether their lifespan should be extended. Improvement works have included new heating systems, new windows and loft insulation.

Improvements to date

Gas central heating, circa 1980's
uPVC windows and loft insulation (100mm), 1995

Schedule improvements

Replacement bathrooms and kitchens, 2011/12
External insulation and improved roof insulation, 2011/12

Performance analysis

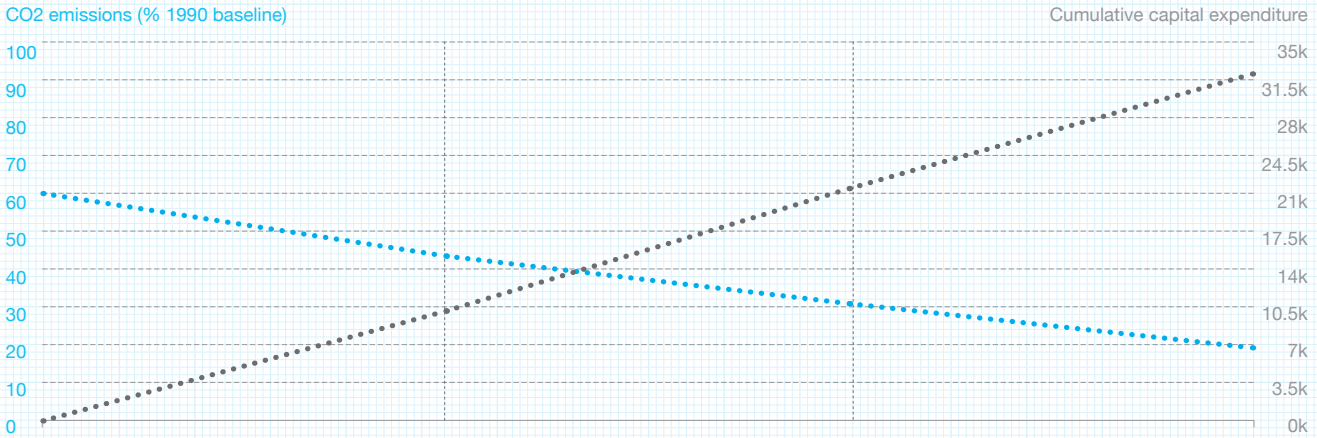
Capital cost	£32,236.58
by floor area	£393.13/m ²

Performance metrics	1990	2009	2025
SAP rating	53 (E)	72 (C)	93 (A)
Fuel cost	£661.84	£540.29	£239.05
CO ₂ emissions	7.6	4.6	1.5
% reduction	- 0%	-39%	-81%

Fabric U-Values	Baseline 1990		As of 2009		Target 2025	
	U Value W/m ² K	Heat loss W/m	U Value W/m ² K	Heat loss W/m	U Value W/m ² K	Heat loss W/m
Windows	4.0	50.9	2.5	31.8	0.7	8.9
Doors	3.9	14.7	3.0	11.3	1.2	4.5
Floor	0.7	29.0	0.7	29.0	0.4	18.0
Walls	2.5	191.7	0.7	50.2	0.2	13.9
Roof	1.8	73.8	0.4	16.1	0.1	4.2

Energy and CO ₂ emissions	kWh	CO ₂ (tonnes)	kWh	CO ₂ (tonnes)	kWh	CO ₂ (tonnes)
Space heating	28,085	5.4	11,876	2.3	1,672	0.3
Hot water	4,753	0.9	4,753	0.9	944	0.2
Electricity	2,995	1.3	3,304	1.4	2,281	1.0

Timeline for future investment



	Phase 1 (2010 - 2015)	Phase 2 (2016 - 2020)	Phase 3 (2021 – 2025)
1. Fabric performance	<p>Walls: Overcladding of external walls with rendered external insulation system (150mm). Insulated blocks to be used to provide stabilisation for the wall panels;</p> <p>Roof: Top-up of existing loft insulation (to 350mm);</p>		<p>Glazing: Replacement of existing frames and glazing units with high performance triple glazing;</p> <p>Doors: Solid timber panel insulated doors;</p> <p>Floors: Installation of insulated timber flooring (10mm insulation, 25mm overall) over existing concrete ground floor;</p>
2. Fit out	<p>Water fittings: Replacement spray taps and/or flow restrictors, low flow shower heads as part of kitchen/bathroom works;</p> <p>Appliances: A+ rated washing machines and fridge/freezers as part of kitchen works (subject to tenant agreement);</p>	<p>Lighting: Switchover to compact fluorescent (subject to tenant agreement);</p>	
3. Energy supply	<p>Gas boiler: Replacement of the existing boiler with an efficient condensing gas boiler (24 kW) to supply space heating and hot water;</p>	<p>Solar thermal: Evacuated tube and/or high performance flat plate collectors (6m²) with an oversized (560 litre) hot water accumulator tank, supplementing the primary heating system;</p> <p>Low temperature heating: Replacement of existing radiators with smaller skirting radiators (utilising existing pipework);</p>	
4. Monitoring		<p>Internal heating systems: Fitting of thermostatic controls and timers for each heating zone in the home;</p>	