

Case study 8

Birchcroft, Smethwick

Archetype

High rise flats

Landlord

Sandwell Homes

Description

Birchcroft is a fifteen storey tower block constructed in the early 1960's. There are 6 two bed properties per floor, with typical floor areas of 75 m², each with a balcony and lift access from a central core. Service ducts running the whole height of the building provide air extract from bathrooms and kitchens.

The construction is a concrete frame with brick skin 50-60mm cavity wall. The cavity has been filled which has created subsequent problems arising from the retention of wind driven rain. The window frames and glazing were replaced at the same time as the cavity fill was added.

The heating systems are all-electric, combining electric storage heaters with an electric immersion storage cylinder for hot water. A quarter of the rooms in each flat currently have low energy light fittings.



Improvements to date

uPVC windows and cavity fill insulation (50-60mm), 1995

Roof insulation (200mm), 2009

Schedule improvements

Upgrading of electric heating systems, 2011/12

Performance analysis

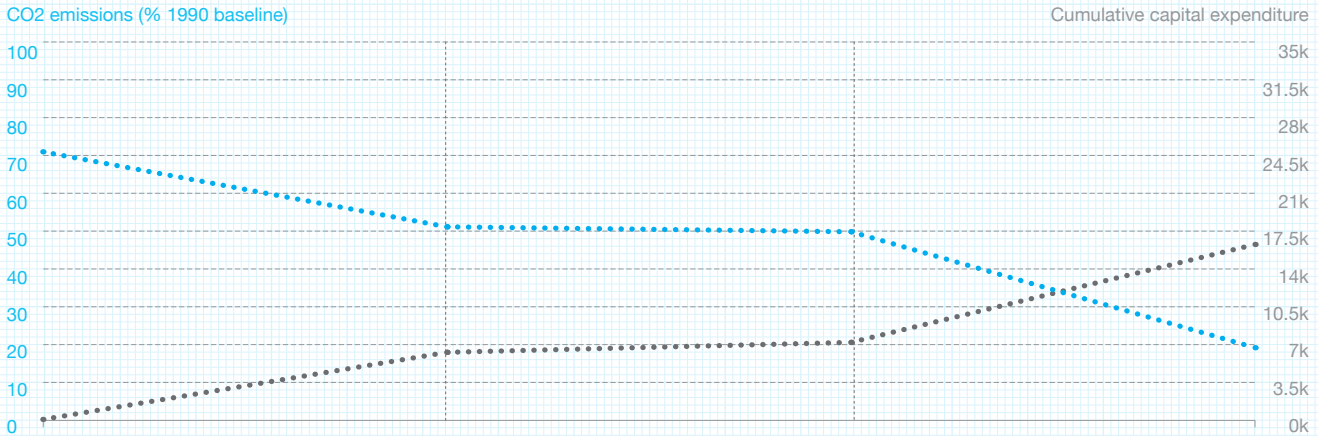
Capital cost	£16,371.26
by floor area	£218.28/m ²

Performance metrics	1990	2009	2025
SAP rating	45 (E)	70 (C)	93 (A)
Fuel cost	£647.90	£411.66	£183.39
CO ₂ emissions	5.4	3.8	1.1
% reduction	- 0%	-29%	-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	40.2	2.5	24.8	0.7	6.9
Doors	3.0	11.0	3.0	10.7	1.2	4.3
Walls	1.3	48.4	0.7	24.7	0.2	8.5

Energy and CO ₂ emissions	kWh	CO ₂ (tonnes)	kWh	CO ₂ (tonnes)	kWh	CO ₂ (tonnes)
Space heating	7,563	3.2	4,242	1.8	476	0.1
Hot water	3,196	1.3	2,963	1.3	2,074	0.4
Electricity	2,034	0.9	1,858	0.8	1,311	0.6

Timeline for future investment



	Phase 1 (2010 - 2015)	Phase 2 (2016 - 2020)	Phase 3 (2021 - 2030)
1. Fabric performance		<p>Walls: Overcladding of external walls with rendered external insulation system (100mm);</p> <p>Windows: Replacement of existing frames and glazing with aluminium clad timber frames and high performance triple glazed units;</p>	
2. Fit out	<p>Lighting: Switchover to compact fluorescent (subject to tenant agreement);</p>	<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>	
3. Energy supply	<p>Gas-fired communal boilers: Installation of gas-fired communal heating system on the roof of the block to supply heat to all flats via insulated flow/return risers.</p> <p>Mechanical Ventilation with Heat Recovery (MVHR): Roof mounted Installation of two MVHR units, each serving 45 flats, utilising existing ventilation ducts for the routing of air extract/supply.</p>		<p>Solar thermal: Evacuated tube and/or high performance flat plate collectors on the roof of the block, to supply supplementary heat to each flat via the insulated flow/return risers;</p>
4. Monitoring	<p>Internal heating systems: Fitting of thermostatic control and timer for a warm air heating coil which will condition the fresh air inlet to each flat;</p> <p>Heat metering: Remotely read heat and power metering to bill for heat, and to provide household access to energy use data;</p>		