



WHINFELL DRIVE, KENDAL

CSH LEVEL 3



5 Bungalows – Summary Report

Impact is a Cumbria-based Housing Association with long-standing links with Thomas Armstrong Construction Ltd.

As with all public sector/social housing, building to meet Code Level 3 of the Code for Sustainable Homes became mandatory in 2008. CSH Level 3 requires a 25% improvement in energy efficiency compared with the standards of Part L 2006.

The initial specification and design was based on timber-framed construction, which after tenders were submitted were considerably over budget. Thomas Armstrong Construction Ltd began to investigate the possibility of using SIM construction. SIM, in this instance, consists of solid Airtec aerated block walls with a rendered external insulation system. However, a SIM wall can have a variety of external finishes, including brick, timber cladding or a high pressure laminate board (HPL).

Thin Joint Technology provided comprehensive construction details of the SIM construction which enabled the building designers to reduce thermal bridging, increase air tightness, increase the thermal values of the walls, floors, roof and windows.



A detailed costing exercise revealed that:

- SIM construction would have a significantly lower cost (approx. 10-15% saving).
- SIM construction would achieve better U-Values than the framed option using premium aircrete with the exceptional thermal conductivity (Airtec XL - 0.09W/mK).
- SIM construction reduces the construction time by a week.
- No lead in time was required for pre-manufactured units – blocks were available from stock.
- SIM construction would negate the requirement for the solar water heating systems (or any type of renewable energy).
- Single-sourcing of materials for the external shell.

For this project, the SIM walls consisted of 190mm Airtec XL blocks with a Relius external wall insulation consisting of 120mm Neopor insulation.

The elemental thermal values were as follows:

External walls	0.16W/M ² K
Floors	0.10W/M ² K
Roof	0.11W/M ² K
Windows	0.8W/M ² K
Thermal bridging	0.4W/M ² K
Air permeability	2.3m ³ /hr/m ²
Party wall sound	52Db

The SIM construction system is extremely flexible and SAP target requirements to Code 3 at Kendal were easily achievable.

Design criteria for other projects, which may require even lower 'U' values, can be adapted to suit each particular element of the dwelling – where a Code level 4, 5 or 6 is specified.

Post Construction cost analysis has shown that the actual saving was 19% lower than the original tender price using timber frame.

In addition, the project was completed in less time than projected timber frame scheme and it is expected that longer term savings are achievable in lower repair and maintenance costs.



Timber Frame Construction

Full superstructure – external skin lintels closers etc. facia, valleys etc.	
Timber frame	
Solar heating	
DG windows	
Ext. doors	
Ext. render	
Total	£83,193.00

SIM Wall Construction

Airtec XL blocks		
Thinset Mortar		
Clanmesh		
Relius V550 System		
Roof Trusses		
Triple glazed windows		
External doors		
Sundries + Lintels		
Additional insulation in roof and floors		
Labour		
Total	£68,625.30	
Saving	£16,125.70	19%
Saving per dwelling	£3,225.14	



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