Case Study No.5

Passive Solar Energy, Resource Conservation

Fairfield Housing Co-operative, Lesley Court, Fairfield, Perth

Type:	New build, timber frame, tenement flats			
Number of units:	18			
SAP rating:	n/a			
U-values:	0.21 Wm^2C roof 0.28 Wm^2C walls 0.45 Wm^2C floor			
Fuel costs:	n/a			
Works costs:	£557,780			
Unit cost:	£30,987			
Completion date:	March 1999			
Contacts:	Client:	Fairfield Housing Co-operative	Grant Ager	01738 630738
	Architect:	Gaia Architects	Robin Baker	01887 820160
	Builder:	Robertson Construction		01738 445123

The brownfield site is close to public transport and shops and lies at the edge of a peripheral housing estate. The "sunscoop" crescent layout of the housing creates a sheltered and semi-private garden area in front of a south-facing 2 and 3 storey block of housing. The housing is a mix of 1 and 2 bedroom flats.

Figure 5.1 The housing forms a curve to "scoop" the sun's heat into the centre and pre-warm the air in front of the block.

Key Features

Energy

High insulation, solar-orientated layout

Wall insulation: 100mm Warmcel Cellulose
Roof insulation: 150mm Warmcel Cellulose
Floor insulation: 50mm Rockfloor

A major objective for the client was to reduce fuel poverty in this scheme. There is a high level of insulation using a "breathing" wall construction that allows vapour to diffuse through to the outside. All electric 'Total Control' heating has been specified to minimise capital and maintenance costs. This is justifiable given the small amount of heating required and the future option of using alternative renewable sources of energy to supply the electricity.

Sunscoop: this is an unusual feature which optimises the layout of the housing to create a warm and sheltered micro-climate on the south side . The amount of energy required to heat the dwellings is reduced by raising the temperature of the immediate external environment on the south side. The combination of heat stored by the hard landscaping and the wall evens out the temperature over the day and evening.

Resource Conservation

Reclaimed materials and boron treated timber

Reclaimed slates were used for the roof, minimising embodied energy as well as blending in with existing roofing surrounding the site. Timber framing was treated with pressurised boron preservative as an environmentally friendly alternative to standard and more toxic timber preservatives.

Other Relevant Aspects

Social and Management

Continuity and community

The scheme is the product of a working relationship between the client and architect stretching back over ten years and many project phases; it contains all the shared knowledge built up over that time.

Costs and Maintenance

All anticipated costs were contained within an agreed budget with Scottish Homes. A HAG rate of 74% was achieved. Landscape maintenance has been minimised by subdividing backcourts into small private gardens.

Figure 5.2 Timber was treated using water based paints and stains.