#### Case Study No.5 Passive Solar Energy, Resource Conservation Fairfield Housing Co-operative, Lesley Court, Fairfield, Perth New build, timber frame, tenement flats Number of units: SAP rating: n/a U-values: 0.21 Wm<sup>2</sup>C roof 0.28 Wm<sup>2</sup>C walls 0.45 Wm2C floor Fuel costs: £557,780 Works costs: Unit cost: £30,987 Completion date: March 1999 Contacts: Client: Fairfield Housing Co-operative Grant Ager 01738 630738 Robin Baker 01887 820160 Architect: **Gaia Architects** 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.

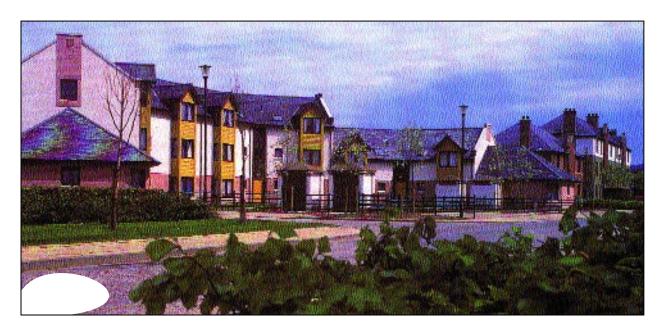


Figure 5.1 The housing forms a curve to "scoop" the sun's heat into the centre and pre-warm the air in front of the block.

## **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.