Fairfield Housing

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Fairfield Housing

The 15-year regeneration of a housing estate in Perth where a holistic approach to sustainability led to the establishment of the housing co-operative that carried out the work and set the design agenda for the work itself.

<< Design detail, Tollhouse Gardens

BACKGROUND

Under its original street name, Hunter Crescent, Fairfield housing estate was established by the local authority in Perth in 1937. In the following decades, the area suffered a precipitous decline in terms of housing condition, housing stock, external environment and general management of the area. Hunter Crescent came to be regarded as one of the most deprived housing areas in Scotland.

By 1985, the estate was notorious for high crime and low employment levels, and subsequently high resident turnover. The population was 936, of whom 200 wanted to transfer out. Unemployment was 80%. This led to a regeneration study jointly funded by the Scottish Development Agency and Perth and Kinross Council, which was carried out by Gaia Architects. The brief was to work with the resident community to produce a plan for economic and physical regeneration. Starting modestly with a few community workshops the momentum of the project built over two years and partnerships were established to take the regeneration forward.

The study stipulated that resident participation should remain a key factor in the regeneration in order to identify the critical underlying issues that needed to be addressed; the poor condition of the housing stock was in many ways symptomatic of the deeper social challenges facing those living in the area. In 1986 an umbrella group – the Fairfield Housing Co-operative - was formed to purchase, renovate and develop the area. This vehicle was designed by Gaia as part of their work, which also included an Urban Design Masterplan. The local authority, Perth and Kinross District Council, passed over the houses to the developer and contributed £4000 per house to kick-start the development.

APPROACH

From the outset, the priorities of the Fairfield Housing Co-operative were paramount in guiding the design of both new and refurbished housing. Aside from the transformation of existing housing stock, the Co-operative's main concern was proactive involvement in the nurturing of community regeneration both economically and socially: key issues in the greater perspective of sustainable development. Another consideration was the reclaiming of external spaces: a previous landscaping scheme had dispensed with private gardens and any notion of defensible space.

The Co-operative and the architects agreed on environmentally-aware measures that would be sympathetic to the evolution of Fairfield. The proposals were then approved on the basis of 'double loaded' benefits for a sustainable design strategy that would also serve economic and social needs.

The architects endeavoured to introduce elements of sustainable design into all phases of the development, and both the client and the design team realised the benefits of such measures. In the later phases, as

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the Co-operative gained confidence and experience, more specialised opportunities presented themselves. The architects had an on-going interest in the relationship between buildings and health, an issue that also bore resonance with the client organisation. This instigated a research programme that resulted in the design of a low-allergen housing development (Tollhouse Gardens). The client was encouraged to embark on such novel research almost as a direct result of a lengthy and productive relationship with their design team. The findings of the research were subsequently shared with allied organisations.

For the client, the incorporation of the most appropriate technologies in housing design – especially in relation to building services – was always going to present a challenge. Overly complex control systems were where possible avoided, but the question of how much say a landlord can have on residents' lifestyles was difficult to answer. For instance, the reduction of allergen triggers in the Tollhouse development was promoted by avoidance of particular materials such as heavy fabrics and carpets. But this highlighted the potential conflict between sustainable design practice and the aspirations of the residents to furnish their homes as they choose.

Gaia Architects are specialists in ecological design and their approach incorporates the following:

- an understanding of sustainable development as a holistic process, in that it encompasses economic, social and environmental challenges
- the importance of community health issues in design strategies
- simple, sturdy solutions that promote maximum benefit via minimal means

PROCESS

Gaia Architects were involved with Fairfield Housing Co-operative since its establishment in 1986, and were key members of the consultant team responsible for setting out the regeneration and community participation processes. Right from the start, the architects implemented key sustainable factors that responded to economic, community and environmental issues. Inspired by the theories of the Scottish town planner and ecologist Patrick Geddes (1854-1932), Gaia's approach proved effective in the bringing together of both grass-root and governmental aspirations for the project.

The architects' long-standing relationship with the Co-operative allowed all three strands of sustainable development (economic, community and environmental) to be explored at different times and on varying levels. Recognising that residents' participation in re-establishing their community was of crucial importance, the architects saw that their role was to enable the realisation of the Co-operative's aspirations.

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RESULT

The key phases of the project and the main work carried out in each were:

Phase	Date	Cost	Sustainable Measures
1	1985-1988	£2.025m	Refurbishment Some materials re-use Landscape and microclimate planting Comprehensive upgrading of insulation and heating systems
3 - McKenzie Court	1991-1993	£3.040m	Refurbishment of 81 houses As above but including non toxic timber treatments and additional ventilation
7 - Leslie Court	1996	£0.880m	New build development of 18 flats - 'Sunscoop Housing' Passive solar site layout Direct gain south facing glazing Non-toxic timber treatments Vapour transfusive walls Non-toxic paint finishes
8 - Tollhouse Gardens	2001-2003	£0.905m	New build development of 14 flats As Phase 7 but incorporating Pore ventilation Mechanical heat recovery Comprehensive low-toxicity specification Low-allergen specification

Phase 3 of Fairfield involved refurbishing 81 existing units. Here, the key environmental factor was benign treatment of timber through boron impregnation and natural ventilation. While the former had obvious benefits in terms of low materials toxicity, it also proved less invasive to the building fabric than conventional spraying methods. Further benefit came via the extra ventilation, which resulted in drier building fabric.

Phase 7 – the Sunscoop Housing

The incremental approach to the regeneration of Fairfield continued until 1996. By then, much of the existing stock had been refurbished and the Co-operative was keen to embark on new-build construction. A development of 18 family units was commissioned under rigorous cost constraints, so as to explore ways in which publicly funded housing design might incorporate environmentally-friendly measures.

This scheme was called 'Sunscoop' housing, so named because of its site orientation strategy: throughout the day the building maximises sunlight

with minimal overshadowing. South-facing façades allow a passive-solar 'direct gain' approach, while south-facing glazing is also maximised. The structure is a standard timber-stud frame, modified to allow a degree of vapour transfer through walls, via more porous building boards and cellulose fibre insulation.

The result is that moisture is reduced leading to a more conducive internal climate. As with earlier phases, timber treatment involved using boron, while low toxicity materials were used, where possible, for internal surfaces and paints. The significant environmental benefits of 'Sunscoop' housing were undoubtedly achieved through applying a sustainable agenda at the basic planning stage.

Phase 8 – the Tollhouse development
The specification of benign timber treatments in the earlier phases of Fairfield underlined Gaia Architects' concerns for the relationship between buildings and health. In Fairfield at that time 4% of adults and 14% of children were suffering from asthma. In light of this the architects were keen to use their work in Fairfield as the basis of live research about health and buildings, and gained funding from the Office for the Deputy Prime Minister for both pre-construction and post-occupancy research. The result of this research was the Tollhouse development. As can be seen from the considerations outlined below, this was the most ambitious building project undertaken by the Housing Co-operative in sustainability terms:

Allergic Trigger	Strategy
Dust mite faeces	Avoid warm damp environments Avoid heavy carpet and fabric coverings Specify easy clean surfaces
Mould	Avoid warm damp environments - specify effective ventilation systems Incorporate hygroscopic, breathable surfaces Consider pore or 'dynamic' ventilation systems
Materials off-gassing	Nil formaldehyde specification All finishes solvent free Linoleum floor coverings Soya oil based paints

In terms of resource consumption, refurbishment of existing building stock involving re-use of certain demolition materials can have less impact than even best practice sustainable new-build. The architects were keen to ensure that the client was in full support of sustainable design measures but also wanted to ensure that the proposals were entirely appropriate for the development and that they formed part of a wider research remit.

The Tollhouse development was funded by a variety of bodies, including Scottish Homes. This development is a working example of how innovative housing design can be matched with equally innovative funding packages to produce a specialist building specification.

Front elevation, Tollhouse Gardens

Design Detail, Tollhouse Gardens

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IN USE

The initial three phases of Fairfield resulted in total renovation of much of the existing housing stock, coupled with a landscape strategy that saw the reintroduction of private residents' gardens, defensible space and landscaped routes throughout the area. The success of the landscape strategy is clear, with exceptional planting throughout and a profusion of well-kept residents' gardens. This approach also resulted in the creation of a benign microclimate, with most streets and site edges protected with layers of planted-shelter belt. As the planting also reduces the houses' exposure to the elements, energy consumption has been lowered, bringing savings for tenants. In contrast to the position in 1987, in 2000 the population of Fairfield had doubled to 1200, with a waiting list of 144 wanting to move in. Unemployment had gone down from 80% to 19%.

KEY LESSONS

- Sustainable design measures should result in multiple benefits. For example low-invasive timber treatments produce lower levels of toxicity and are less invasive to the building fabric while south-facing window openings lead to both better solar gain and better ventilation.
- The pivotal role of landscaping in establishing benign microclimates and improving development amenities.
- Recognising the potential conflict between householder choice and sustainable proposals.
- The use of research-based developments to secure extra funding.
- Strong resident participation engenders committed support for sustainable measures.
- Refurbishment is inherently environmentally friendly in terms of materials consumption.
- Sustainable design should not focus solely on building fabric and services. Social and economic strands of sustainability are equally important.
- Basic design decisions such as site layout and orientation are critical to the success of a development.
- The profound effect of buildings on health is a challenge that the housing sector is slow to address.

Undoubtedly the most important factor in the successful development of Fairfield was the architects' unique position in being closely involved with the client from the outset. This long-term relationship allowed for the introduction of progressively more innovative sustainable strategies. The Fairfield-Gaia relationship exists as a prime example of the benefits of project partnering and points towards the benefits that such strategies might offer all sections of the construction industry.

The architects endeavoured to make sustainable proposals a seamless part of the entire design process and were adept at proposing measures that were of high environmental value but that also remained within cost remits – a factor particularly apparent in the 'Sunscoop' project. It was concluded that good design was not predicated on sustainable measures alone but on the overall quality of the proposal. This had the knock-on effect of ensuring smooth navigation of planning legislation.

Project Information

Location:	Fairfield Avenue, Perth, PH1 2TF
Client:	Fairfield Housing Co-operative
Date completed:	2003 (phase 8)
Project Value:	£2.025m (Phase 1), £3.04m (Phase 3), £0.88m (Phase 7), £0.905m (Phase 8)
Architect:	Gaia Architects, Edinburgh (phases 1, 3, 7 & 8)
Structural Engineer:	Allen Gordon and Company
Quantity Surveyor:	Hamish Bell Associates
Specialist Consultant:	Hutton and Rostron, (Benign wood treatment specialists)
Main contractor:	Hall and Tawse Scotland, Foreman Construction
Core funders:	Scottish Homes
Additional funders:	OPDM (low-allergy research)
Awards:	RIBA Award 2000 British Council for Offices Award 2000 Scottish Design Award 'Corporate Building' 2000 Scottish Design Award 'Chairman's Award' 2000

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