

<h1>Case Study No.10</h1> <h2>Self Build, Low Embodied Energy</h2>				
Link Housing Association, Benarty Self-Builders, Fife				
Type:	Newbuild, self-build, shared ownership 1/2 storey			
Number of units:	5			
SAP rating:	96			
U-values:	0.16 Wm ² C roof 0.22 Wm ² C walls 0.16 Wm ² C floor			
Fuel costs:	n/a			
Works costs:	£160,000 total (excludes sweat equity)			
Unit cost:	£32,000			
Completion date:	April 2000			
Contacts:	Client:	Link Housing Association	John McDowall	0131 557 0350
	Architect:	Duncan Roberts Architect	Duncan Roberts	01668 213146
	Builder:	Benarty Self Build Housing Association		
	Project Manager:	Community Self Build Scotland	Robert Chalmers	0131 443 7081

This scheme demonstrates the contribution to social housing that collective self-build can make, providing construction skills for a local community and reinforcing the local economy. The brownfield site chosen is within an existing interwar housing estate a few miles outside Glenrothes. Local amenities are 400 yards away. Car parking is in curtilage as per planning requirements of two spaces per house.

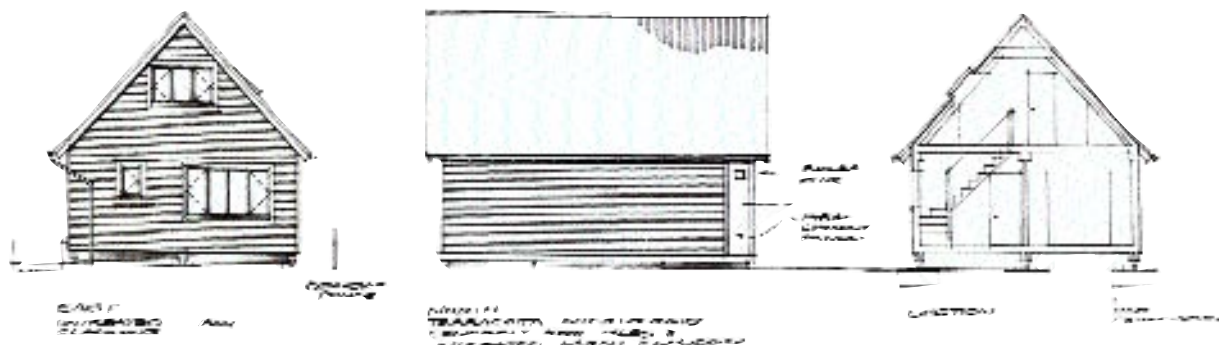


Figure 10.1 Elevation and section of two storey self-build house showing the economy of “room in the roof” timber construction (drawing

Key Features

Social and Management

Self-build, tenant training, avoiding wet trades, gender balance

Self-build is sometimes treated with caution by housing providers because of perceived additional management requirements. In this case, the partnership with CSBS has minimised any additional requirements.

Tenant training: the housing association formed a partnership with Community Self Build Scotland (CSBS), a specialist support agency for social housing self-builders. Funding was provided by Scottish Homes, the Scottish Executive and the European Social Fund. A group of unemployed residents from the local area who wished to build their own homes was formed and they received training at Lauder College in Dunfermline. A site supervisor and project manager are funded via CSBS to help oversee the work and continue the training.

The quality of workmanship on site is particularly impressive and shows the care and concern that is engendered when building “a home of your own”. Wet trades are avoided and the use of lightweight construction built collectively has encouraged women to participate in an area generally reserved for men.



Figure 10.2 The use of lightweight timber construction has encouraged women to take

Energy

Low embodied energy, breathing insulation

Wall insulation: 150mm Warmcel cellulose insulation

Loft insulation: 300mm Warmcel cellulose insulation

Floor insulation: 175mm Warmcel cellulose insulation

Embodied energy: the houses are constructed using a timber post and beam method pioneered by Walter Segal¹ which minimises concrete foundations and reduces resources required in the underbuilding. The use of indigenous larch cladding further reduces the embodied energy compared to traditional block construction. This form of construction was particularly appropriate given that the site had poor bearing capacity due to peaty deposits. One drawback, however, is the need for ramps or steps as the ground floor is raised from the ground.

Breathing insulation: the use of cellulose insulation and bitvent sheathing combined with a rainscreen of timber cladding ensures that the walls are “breathing” and allow moisture to diffuse away from the inner surfaces.

Other Relevant Aspects

Healthy Dwellings

Sustainable and non-toxic materials

An environmental specification which sourced sustainable and non-toxic materials included the following:

- wood framed windows
- natural clay drainage
- no timber treatment inside dwellings, apart from exposed internal frame members
- solid wood skirtings, cill boards and linings instead of mdf.

¹ Broome and Richardson (1991)

Costs and Maintenance

In recognition of the "sweat equity" put in by the self builders, they get a 25% share in the ownership. Being shared ownership, the residents are wholly responsible for the maintenance of the scheme. As self-builders they will be better equipped for this task than most new owner occupiers. The project forms a good model for housing providers who wish to introduce genuine low-cost ownership into their stock.