Forestry Commission



Green cottage design in the New Forest

Anderwood End Cottages are the first houses to be constructed on Forestry Commission land for 50 years. Situated within the New Forest at Burley, Hampshire, the two 3-bedroom semi-detached houses, complete with barns and stabling, have been built exclusively for the Commoning community. A lack of affordable housing had made it difficult for young Commoners to live and work in the area, and as a major provider of rental holdings to Commoners, we were keen to provide additional homes that would meet the community's needs, and uphold the traditional practice of grazing livestock. The sale of Forestry Commission property allowed the reinvestment of capital into the project, with additional funding from the South East England Development Agency sustainable development of rural homes scheme. A 0.2 hectare, former engineering depot, situated next to agricultural land, was chosen for the development, and we worked closely with the New Forest National Park Authority to meet the area's strict planning standards. It took less than a year (from planning consent to completion) to build the timber-framed energy-efficient houses. Environmental values were at the heart of the project, with local craftspeople employed, and specialist construction teams staying in local guesthouses to reduce the need to travel.



Two new timber cottages in the New Forest have sustainable features incorporated into every aspect of the build – from high quality natural materials, to maximum insulation levels, and renewable technologies

The New Forest cottages were designed by specialists in green oak frame buildings and sustainable housing using a design that integrates a simple contemporary style with traditional materials. A modular framework allows the building to be modified at a later date and provides an easily replicable template for larger-scale projects. The structure features a green, load-bearing post and beam construction which has been used in building since the medieval times. Green timber provides a robust and flexible building without the need for load-bearing walls and is one of the most sustainable methods of construction.

A team of skilled craftsmen spent five weeks working up the timber frame in their factory. The bespoke timbers – made from Douglas fir harvested just ten metres from the site and milled locally – were assembled on site in five days. The walls are made from pre-manufactured insulated panels, which minimises labour and speeds up the construction process. The panels are encased in a damp-proof seal and provide a continuous vapour control layer and insulation. Bespoke wood-framed windows were made and installed to ensure maximum airtightness. The cottages are clad in untreated Douglas fir timber from the local supply. Timber joinery was used throughout and, except for screws that fix the panels to the frame, traditional oak pegs hold the entire building together.

Insulation and ventilation

The 'build tight – ventilate right' philosophy was adopted and the houses were designed according to a model that uses separate layers of construction to minimise air leakage: a service zone, laid beneath the plasterboard, a vapour control layer and insulation and cladding wrapped continuously around a structural timber frame.

Solar energy

The kitchen maximises passive solar design, with floor to ceiling windows that allow natural sunlight to flood in, and a west-facing aspect to prevent overheating. Six 2 kilowatt solar photovoltaic panels on each house provide a renewable source of electricity to the building. The system is connected to the national grid, which provides supplementary power to the building when required, with the option to sell surplus electricity back to the grid.

Ground source heat pump

Space heating is provided by a ground source heat pump, which transfers heat from the ground into the building. The lengths of pipe for the system were buried in horizontal trenches dug in the extensive open area to the rear of the building where the tenants keep livestock. An electric heat pump was installed to boost the incoming heat, which is then evenly distributed through the house by the underfloor heating system.

Wood fuel

Additional space heating is provided by a 4 kilowatt log burner installed in the sitting room.

Heat recovery

A heat recovery system circulates warm air around the building by drawing warm air from the bathroom and kitchen into a heat recovery unit. The unit filters the waste heat, transfers it to clean air from outside using a heat exchanger, and circulates the fresh warmed air.

Water

To reduce water consumption flow restrictors and dual flush toilets have been installed. One house has a 185 litre bath and the other a shower only.

✓ Achievements

- Achieved Code for Sustainable Homes Level Four.
- 100% sustainably sourced timber.
- 100% low energy lighting.
- Air leakage test result was 5.34 m^3 per hr per m^2 against a target of 7.0 m^3 per hour per m^2. This is half the Building Regulations requirement which is 10m^3 per hour per m^2.
- The build took less than a year from planning consent to the completion of the build: planning was passed in June 2007, the first hole dug in October 2007, and in 6½ months the project was complete.

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ISBN: 978-0-85538-806-5

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FCMS023/FC-GB(ECD)/JTCP-2K/JUN10