



Scale of development

Small

Type of development

Dwelling & Two Holiday Cottages

Sustainability features

	Design
	Energy
	Water Conservation
	Water treatment & discharge
	Health & Wellbeing
	Materials
	Maintenance
	Waste
	Community

Features

- ❖ Extensive re-use and recycling of materials
- ❖ Application of low-energy principles to a hard-to-treat renovation project
- ❖ Incorporates a variety of renewable energy technologies

Introduction

Radical renovation of a derelict granite barn plus new construction of two small holiday cottages near Land's End. Self built and locally designed to incorporate the fundamentals of low energy design

Construction and Materials

Derelict barn was largely rebuilt. The wall construction comprises an interior ordinary block leaf, 120mm of PUR insulation, 'SureCav' HDPE cavity spacer system, faced with 300-600mm granite reclaimed from the original ruin. Barn roof has 170mm PUR insulation; cottages have 300mm sheep's wool.

Joinery is locally made joinery from French oak. All stonework is bedded and pointed with lime mortars. Much of the aggregate used was recycled from on-site. Roof timbers are from SW-sourced chestnut. Guttering is galvanized steel and the wet-laid roofs use Spanish slate and lime mortar.

Energy Efficient Design and Technology

Priority was given to minimizing the buildings' heat loss through high levels of insulation and air-tightness and paying close attention to minimizing thermal bridging. The large volume of the barn and plus its exposed location give it the potential for high ventilation heat loss. To reduce this there are no trickle vents on the windows and an MVHR unit is used.

All three buildings have under-floor heating connected to thermal-stores. These are heated by efficient wood-burning stoves plus an oil-fired condensing boiler as back-up. Hot water is largely provided by the 12m² of solar thermal panels.

Site Considerations

Orientation of the original building coupled with planning restrictions made it difficult to maximise the benefits of solar gain. The south-facing roof of the cottages has been used for solar-thermal panels, whilst the barn's south-facing gable incorporates a large, off-centre glazed section to help reduce space heating requirements. Complicated planning issues took 18 months to resolve.