GELSTON HOLIDAY COTTAGES
Castle Douglas, Dumfries & Galloway

Why Use Woodfuel?
The woodfuel system was installed to replace the old, often problematic boilers at each property and to make use of resources from the improved silvicultural management of the estate’s previously under-managed woodland.

“With these goals, the solution clearly needed to be a woodfuel district heating system.”

Woodfuel harvesting operations from the estate’s own woodlands have allowed significant financial savings to be achieved, whilst also improving the condition and future productivity of the woodlands. Currently, the woodlands are producing a large amount of timber that is only suitable for firewood, but the improved silvicultural regime may increase the quality of future harvests.

The estate has also better insulated itself from the volatility of oil prices and it now has a dependable source of fuel on which it can base fuel cost forecasts.

Key Benefits of this Woodfuel Installation
// Utilises estate-owned timber and adds value to woodlands
// Improves woodland management & silvicultural practices
// Self-sufficient fuel supply
// Increases fuel security
// Provides efficient heating and hot water for 9 units
// Reduces heating costs

System Accolades
The woodfuel heating system was retro-fitted into seven old stone buildings and required a complete redesign of the previous heating system including replacement of four oil boilers. The three remaining properties were previously heated by electric storage heaters and required new wet heat distribution networks to be installed. The boiler was installed in the former coach house, which has listed building status, so a sympathetic and patient design process was required, especially for the flue.

The estate’s own hardwood logs are being processed, stored and delivered from estate woodland resources less than 1 mile away.

The new woodfuel system, with backup from a 100 kW oil boiler, provides a much more efficient and reliable system than the previous old boilers. After two years of continuous operation the owners are very happy with the development of their own fuel supply chain: the efficiency, both financially and environmentally, continues to improve as prices on world energy markets increase.
Lessons Learned:
// If using your own resources, you need to plan your fuel supply one year ahead
// Get training from your installer so that you clearly understand the controls of your system
// Adjust the user definable parameters to suit the site conditions

What is a district heating scheme?
// A heating pipe network for distributing heat generated from a centrally located boiler
// Suitable for residential and commercial use
// Provides space heating and water heating

Benefits of District Heating
// Cost efficient; a single boiler, boiler house and fuel store can supply many properties
// Heat recovery system ensures a high level of energy efficiency
// Delivered heat to each user is measured in kWh and accurate, individual bills can be produced for each customer’s usage

BOILER
Application Holiday Cottage and Domestic District Heating Scheme
Max output 70kW
Manufacturer Froling log boiler
Fuel type Logs
Fuel specification 500mm split lengths
Moisture content 30%
Installation date May 2007
Backup system Oil boiler 100kW
Fuel loading interval Loaded and fired daily
Woodfuel use 2-3 tonnes per week

BUILDING
Heated area 840 m2
Heated volume 2000 m3
Building fabric Stone buildings
Building use 7 units
(4 holiday cottages, 2 residential properties and 1 office)

INSTALLATION COSTS
Boiler System £42,000
Funding source Scottish Biomass Support Scheme
Funding support rate 50% of additional costs of woodfuel system

COST SAVING
Previous fuel type Oil and electric storage heating
CO2 savings pa 58 tonnes
Woodfuel cost Estimated cost to estate of employing men to process woodfuel is approximately £4,000
Annual fuel cost saving £6,000
Payback period 12 years (inc. cost of radiator system)