

## Lochalsh House, Balmacara Estate Sustainable Heating Project

### Introduction

In 2010 The National Trust for Scotland (NTS) carried out a substantial building and energy-efficiency upgrade to their Estate office at Balmacara, near Kyle of Lochalsh. The Trust was keen to ensure that the building was made as energy efficient as possible.

Following an appraisal of renewable options and with due consideration to the age of the building; the retro-fit nature of the project and the restricted space around the building, it was decided that a wood pellet boiler and accumulator tank system offered the best option for providing adequate heat and hot water to the building.



The NTS applied to Community Energy Scotland to develop their wood pellet project. This was in the form of a CARES capital grant, which contributed toward a new boiler and hot water system. This building is also the accommodation and home for the estate manager and his family.

### Equipment: Japsi Pellet Master 65kW Wood Pellet Boiler with 1000l accumulator tank

The new system replaced an existing hybrid oil boiler/cooker system. Due to the heat load profile of the building, the retro-fit nature of the project and the existing heating system (which was conventional radiators), biomass heating of some sort was the obvious choice; however, limitations on delivery and storage for woodchip meant that a wood pellet boiler system with internal pellet storage the best fit.

The aim of the project overall was not only to upgrade the hot water and heating system, but to ensure that any new heating was complimented by upgrading the thermal status of the building too. Lochalsh House is an historic building and whilst there was a good level of insulation carried out, this was restricted due to the internal linings and stonework fabric of the building. Other energy efficiency measures included fitting secondary glazing and replacing all lighting with low energy lighting.

N.B. since the installation of the system in 2010, the NTS has also installed (non-CARES assisted) solar thermal panels linked into the accumulator tank.

### Cost and Grant Funding

Total Project cost	£ 23,483	The remaining funding was obtained through:  The National Trust for Scotland – own funds.
CARES grant	£ 11,717	
CARES grant Percentage	50%	

### Fuel Bill Savings

Whilst fuel savings feedback from this project have been fairly unsppecific, the project overall has been a 'win-win' for the NTS. Insulation measures have reduced the heat load and with kWh produced from wood pellets being cheaper than those from the original oil system the property and the organisation is economically better off.

## Local Impact

The installation of this system was one of the first biomass systems that the NTS had installed in the area. This has increased the awareness of the technology and wood pellet as an alternative fuel.

## Emission Savings

Annual CO <sub>2</sub> savings (kg)	29,572
20 yrs lifetime CO <sub>2</sub> savings (kg)	591,440

## Lessons Learned

- Ensure that you have reliable on-site staff for the day-to-day maintenance
- Be aware that cheaper fuels can reflect fuel quality and variability
- As well as heated, you should also ensure that your building is also well ventilated

“Although we were attracted to the low-tech nature of the Japsi system, you need to back this up with local staff that are willing and understand that the most effective operation of the boiler requires a good cleaning and maintenance regime” Glyn Young, Surveyor, National Trust for Scotland



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