

Ripley Castle Woodfuel Heating

- **Local authority area:** Harrogate Borough Council
- **Stakeholders:** CO2Sense, Ripley Castle

Summary

CO2Sense has shown Ripley Castle estate how it can save money and CO2 by switching from gas to woodfuel heating.

Background

- Ripley Castle, near Harrogate, North Yorkshire, has been the home of the Ingilby family for 700 years. Open to the public all year, the castle won the Yorkshire White Rose Best Small Visitor Attraction of the Year Award in 2009. The castle hosts corporate entertainment events, conferences and weddings, and runs a tea room and gift shop on site.
- A feasibility study funded by the CO2Sense Woodfuel Programme looked at the benefits of introducing a woodfuel heat network for the Castle.
- As the boilers and wet heating system in many areas of the castle are approaching the end of their life, now is an ideal time for the castle to look into alternatives to a conventional fossil fuel heating system. The current annual gas usage in these areas approaches 1MWh, and costs the estate more than £23,000 each year.

Method

- The study looked at heritage, planning and technical issues as well as considering the cost, CO2 savings and payback time of a woodfuel installation.
- The costs and payback of the project were also compared to other options - replacing a number of old distributed gas boilers with newer gas boilers or moving to a centralised gas fuelled heat network.
- This assessment showed that the woodfuel heat network has the quickest payback as well as largest environmental benefits.
- Using a woodfuel heating system has several advantages for the castle – it is a stable, reliable fuel source, which supports the regional economy through purchasing locally produced woodchip or pellet, it reduces carbon dioxide emissions and offers annual savings on heating bills.



- Furthermore, a portion of the required woodfuel may be available from the estate's own woodland, offering a degree of self-sufficiency.
- The study provided detailed information about the costs for a woodfuel heat network. It also reviewed the practical considerations for installing a woodfuel plant – where to locate the boiler, fuel storage and processing facilities on such a historic site, and what legislation and regulations would need to be satisfied to carry out the project.

Result - Key outcomes and impact

- The study found that with the support of the recently confirmed Renewable Heat Incentive, and in the face of rising gas costs, the proposed scheme would provide a payback period of 14 years. In comparison, a gas fuelled network would never achieve positive payback, and the payback period of upgrading the existing distributed boilers would be longer than the life of the replacement boilers.
- Despite this, the full upfront capital cost of the woodfuel heat installation and fuel infrastructure is approximately £490,000. This high capital cost requires innovative financing solutions to be considered, and so the study looked at the possibility of the castle using an Energy Service Company (ESCo) as part of the project.

Key contact

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