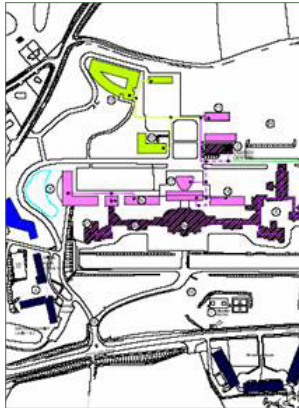


ENVIRONMENTALLY RESPONSIBLE ENERGY PROVISION FOR DOWNSHIRE HOSPITAL

CLIENT

THE DOWN LISBURN TRUST

VALUE £1.3M



PROJECT

In 2005 the Downshire Hospital occupied a 55 acre site to the east of Downpatrick, County Down and provided accommodation for psychiatric patients in a mixture of 19th and 20th century buildings. Most of the buildings were supplied via a district heating network from the Hospital's energy centre and some outlying buildings had their own dedicated oil-fired boilers.

A considerable proportion of the building stock had become surplus to the Hospital's accommodation requirements and it was proposed to re-develop the site as a 'community services campus'. This would include new psychiatric accommodation together with a cottage hospital and various other community facilities such as a police station. The Trust wished to consider future options for environmentally responsible energy provision to the site to help contribute to carbon reduction and it was successful in applying for a grant from the Community Energy Programme for feasibility study and business plan development work.

CONTRIBUTION

In January 2005 BRE was appointed to conduct the work. The viability of the various options, listed below, was evaluated on the basis of their Whole Life Cost (WLC) over a fixed 25 year assessment period:

- A 'business as usual' or 'do-minimum' option - retaining the existing system to serve refurbished buildings and installing new oil boilers in each new building.
- As above, but with existing boilers replaced with new.
- Oil fired district heating for the entire site based on extending the existing system.
- Biomass fired district heating for the entire site (750kWth), with the existing oil boilers for top-up and standby.
- Diesel engine combined heat and power (CHP) (750kWe) supplying district heating and electricity to the entire site, with the existing oil boilers for top-up and standby.
- Hybrid option of biomass boilers and diesel engine CHP, with existing oil boilers for top-up and standby.

The analysis showed that the hybrid biomass boiler/CHP option offered the best CO₂ savings (2.5MtCO₂pa), but it was also the most capital intensive. This option, however, offered considerably lower net annual operating costs than the 'do-minimum, due to the high value of CHP generated electricity. It became the preferred option overall, delivering a potential WLC saving of £2.8m.

BENEFITS

Backed by an extensive experience in community energy networks coupled with a detailed knowledge of whole life cycle costing techniques BRE was able to demonstrate how the Trust could meet its carbon savings objectives whilst at the same time achieving best value for money. Development planning of the site continues, with the hybrid option district heating now firmly at the core of energy provision.