

Wood-fuelled heating – Queen Elizabeth Country Park Visitors' Centre, Hampshire

Status of Project:	PROPOSED – Expected July 2006
Location:	Gravel Hill, Horndean, Waterlooville, Hants. PO8 0QE (OS Grid Ref: TQ628497)
Owner / Developer:	Hampshire County Council & Forestry Commission
Description:	Woodchip-fired boiler heating system



Photo: QECP

Background:

Queen Elizabeth Country Park (QECP), run by Hampshire County Council in conjunction with Forest Enterprise, comprises 570 hectares of woodland and downland set in a wider landholding of 850 hectares, all inside the East Hampshire Area of Outstanding Natural Beauty (AONB). The park accommodates walkers, cyclists & horse riders and includes Butser Hill National Nature Reserve (above) and a main Visitor Centre near Horndean, owned and managed by Hants CC in 40-yr partnership with the Forestry Commission. Being aware of the environmental impact of its operations and its visitors, QECP has introduced carbon-emission reduction measures, waste management and conservation of biodiversity; the programme includes low-energy lighting, energy conservation promotion.

In 2004 a major feasibility study to assess a broad range of renewable energy options for the Visitor Centre was initiated, funded by the Government Office for the South East and the local AONB, and carried out by a working group (including Wood Energy Ltd). It focused on wood fuel as the chief recommendation, most of the Park being beech woodland.

The study initially considered a proposal for a wood-fired combined heat and power system to supply heat and electricity to the site, exporting any excess to the local grid. Due to CHP economics at this scale, this was rapidly dropped in favour of focusing on the heat-only wood chip system that was finally recommended. Some neighbouring farmers were also surveyed to see if a farm-based district storage/supply was a possibility, and it was thought this would first require greater local demand. The exercise was completed around May 2004.

A year of fundraising followed, including two unsuccessful Clear Skies grant bids. All the funding was in place by the end of 2005, having been awarded by EDF Green Fund, DTI New Opportunities (Bioenergy Capital) Fund, DTI Clear Skies, the Forestry Commission, East Hants AONB Sustainable Development Fund, Hampshire CC, SEEDA, and the Natural Light Partnership. Planning consent was applied for an extension to the visitors' centre, which was built in 1976, to incorporate biomass boiler, was granted in December 2005. At this point detailed study on design, fuel supply and operational issues has been commenced by Hampshire CC's head heating engineer, with a view to going to tender for supply, installation and commissioning in March 2006. The successful bidder will be expected to commission the project by July 2006.

Technology / Scope of Project:

The boiler will be approximately 170 kW in capacity, serving an annual heat load of 270,000 kWh in the form of central heating & hot water to the extended visitors' centre and existing shop, café, theatre and offices (used by 20 people). Hot water accounts for 51,000 kWh, or one-fifth of the total load. This heat demand is anticipated to require a supply of up to 80 tonnes of wood chip per year. The woodchip, at 25% moisture content, will originate from QECP's own beech woodland and will be required to conform to the size standards set by the S.E. Wood Fuel Partnership & the S.W. Woodfuel Group.

It was decided that QECP would pay for its wood to be chipped, itself taking no part in the actual chipping process – a decision based on looking at a fair number of small systems in the area which use their own individual chippers. Instead they will seek economies of scale by using the services of the nearby East Meon Sustainability Centre, who are to acquire a large chipping machine for these purposes. The QECP visitors' centre scheme is designed to work at a maximum price of about £40/tonne woodchip delivered. The chips will also be of a sufficient specification to be used for 'play-chip' for re-surfacing paths and the Park's two children's play areas!

The total upgrade and installation cost is £118,000 – this is the entire project cost including the hardware, the building extension, the fuel store, gas boiler back-up and educational features. The boiler itself comprises £20-30,000 of the total cost. Extension to other buildings via a district heating network will be possible if the woodchip systems work as planned.

Importance to the South East:

This scheme offers a chance to replicate the project across the area and potentially even to help kick-start demand for a district wood-fuel storage and supply system. The County Council and the QECP management took expert advice and undertook detailed research of their own into other local and regional examples of chip heating. Their interest in promoting the most reliable, financially viable and sustainable option could result in an exemplar to convince similar organisations who are previously put off by taking a very cautious approach to the technology.

The forthcoming project has received attention in various outlets of the county's local press and interestingly, by the end of 2005 East Hants AONB had already received grant bids from three further small to medium-sized biomass heating proposals.

Public education is an important related aspect of the impact that the scheme will have. The Park's Manager, Tim Speller, refers to it as an opportunity to become a "very big shop window" for renewable energy and the sustainable end-usage of wood. The c.280,000 visitors to the Park each year will in theory be able to stroll through the productive woodlands, view the seasoning timber in the store, watch a video in the Visitors' Centre explaining the processes and benefits involved, and then see real-time electronic readouts of the boiler's heat output etc.



Photo: QECP

Woodland at the Queen Elizabeth Country Park is set to provide biomass for heat

Acknowledgements: Many thanks to Tim Speller (Manager, QECP) and www.hants.gov.uk/countryside/qecp for material used in this case study.