Forestry Commission



Green design at Dalby visitor centre

Dalby Forest near Pickering is the largest forest in Yorkshire and a key attraction in the North York Moors National Park with 400,000 visitors per year. The forest was used primarily as a timber resource until 1960, when the opening up of a through-route brought more visitors to the area. Today, the forest plays a major role in the local tourism sector and offers a range of outdoor leisure activities including mountain biking, seasonal concerts and the high-rope course 'Go-Ape'. A project to develop the forest as a regional centre of excellence for sustainable activities saw the site undergoing redevelopment, with the renovation of buildings at Low Dalby providing a cycle centre and area for business use. The new visitor centre with community facilities, restaurant, and retail and exhibition areas opened in April 2007. It also features an interactive learning centre for renewable technologies. The centre has been designed to nestle into the natural landscape, and it was constructed using the latest sustainable building methods.



Dalby Visitor is one of the Forestry Commission's first sustainably-built visitor centres, designed to minimise impact on the surrounding valley during its construction and operation

The site of the new visitor centre was excavated using a 'cut and fill technique', minimising environmental impact and the amount of soil that had to be moved. The building is set on steel screw pile foundations and is fixed to the ground with 39 screws, making it easy to remove and be recycled should the building no longer be required in the future. The main structure has been constructed using pre-made glue-laminated frame made from certified Scandinavian hardwood. The floor, roof and walls are formed from insulated panels, creating a 'super insulated' external envelope. Oak was used for the internal floors, and Douglas fir for the window frames and doors. The building is clad in untreated larch harvested from the surrounding forests and locally milled. The naturally-weathered timbers provide a distinctive finish. The whole structure has a negligible environmental footprint and can be completely dismantled and recycled at the end of its life.

Woodfuel

A 50 kilowatt woodfuel boiler provides heating and hot water. The boiler is fuelled using wood pellets, made from compacted sawdust, which burn very effectively. The fuel hopper holds 5 tonnes of pellets (sourced from the UK) which provides heating for 8–10 weeks. It uses a reservoir of heated water to buffer variations in demand, with auto-ignition and the ability to slumber when required, suited to the building use and insulation performance. One of the objectives was to promote good practice in the use of woodfuel, set the standard for other visitor centres and provide new levels of energy efficiency.

Natural light and ventilation

The building has been designed to maximise natural light and ventilation. The central atrium provides an impressive foyer and meeting place which is naturally ventilated by single-glazed windows that automatically open and close. A 'stack effect' (hot air rising) pulls cool air in through the lower windows during hot sunny days.

Building management system

An integrated building management system controls the natural ventilation systems, monitors electricity from the solar panels, wind turbine and woodfuel boiler, and manages the temperature in various parts of the centre to ensure maximum thermal efficiency.

Solar

Photovoltaic panels on the atrium roof consist of 10 solar modules that contribute to the energy load. On a bright day the array can produce 1.5 kilowatts of electricity per day. A solar thermal installation provides supplementary water heating.

Wind power

A small wind turbine was installed as part of an educational display that demonstrates how renewable energy technologies work.

Recycled material

A variety of recycled materials have been used for the internal fixtures and fittings. The toilet doors are made from recycled plastic bottles, toothbrushes, electrical cable casing, coffee cups and yoghurt pots, and the reception desk from mobile phones and wellies. The roofing membrane is made of recycled bicycle tyres.

Water management

Rainwater is used for flushing the toilets which reduces reliance on the village water supply. Foul waste is treated on-site with a bio-filtration system so that the clean water can be safely released into the local river.

✓ Achievements

- The project was delivered within the agreed timescale and budget.
- Winner of the Prime Minister's Better Public Building Award 2007.
- 2007 National RICS Pro Yorkshire award for sustainability.
- Yorkshire Post Excellence in Business Awards 2008: Project of the Year.
- Shortlisted for the Sustainable Awards 2007: Building of the Year (Largest Project).
- Shortlisted for the Welcome to Yorkshire Sustainable Tourism Award 2009.
- Shortlisted for the Yorkshire Moors and Coast Sustainable Tourism Award 2009.
- Green Tourism Award - grading pending.

Contact for further information: Alan Eves (alan.eves@forestry.gsi.gov.uk)

ISBN: 978-0-85538-806-5

© Crown copyright 2010

FCMS023/FC-GB(ECD)/JTCP-2K/JUN10