



Centre for Construction Innovation

NWDA Exemplar Project

# Northwest Development Agency Sustainable Buildings Rising Bridge Business and Enterprise Village



Lancashire County Council's economic development department, Lancashire County Developments Limited (LCDL), in partnership with Rossendale Borough Council and the Northwest Regional Development Agency (NWDA) are committed to creating a 'flagship' business development. Lancashire County Council has invested in excess of £6 million to build the office development and secured a grant of up to £820,000 from the NWDA towards the development, including site remediation and construction costs, to create a high quality business space.

The Business and Enterprise Village with its very high standards of environmental sustainability and performance will become a visible sign of investment and a demonstration of confidence in the growth of the business sector in Lancashire.

The Rising Bridge Business and Enterprise Village involves the remediation of 1.4 acres of

land to create nine, high quality offices as starter/expansion units for small to medium size businesses in support of the Jobs and Growth Agenda. The development will be of a high environmental standard, and the design notably includes provision for a new wildlife corridor which, functions as an educational resource area on the shared boundary with the local primary school.

The aims of the project were set out to ensure that the development would be environmentally sustainable, with the key drivers to:

- Achieve an 'Excellent' BREEAM rating. A design stage award of 70-75% was achieved.
- Reduce the need for car-parking through improved cycling facilities and travel plans.

**Client:**

Lancashire County Council

**Contractor:**

ROK Building Ltd

**Location Type:**

Semi-urban

**Project Type:**

Business & Enterprise Village

**Project Value:**

£ 7million

**Sustainable Buildings Policy Themes Included:**

**Primary Area of Achievement**

- BREEAM Excellent



- Reduce waste generated and energy waste during and post construction through the use of best practice commissioning, and site management processes.
- Maximise the health and well-being of the occupants of the Business and Enterprise Village through careful and considered design. This challenged the notion of industry improvement.

## Key Facts

**BREEAM Rating:** Excellent (pending completion)  
Score: 70 – 72% (pending completion)

**BREEAM Version:** Offices 2006

**Project Manager:** Chris Dyson, Senior Project Officer, at Lancashire County Council's Economic Development Department (LCDL)

**Architect::** Jason Homan, Principal Architect, Lancashire County Council

**Contractor:** ROK Building Ltd

**M&E Contractor:** Clancy's

**BREEAM Advisor:** Ben Sidebottom at Scott Hughes Design

**Net Area of development:** 1.4 acres



## BREEAM Category Scores

(Section: % section credits achieved / overall weighted %)

**Management:** 100% / 15%

Environmental features: Best-practice commissioning and site management processes.

**Health and Wellbeing:** 84.62% / 12.69%

Environmental features: Natural daylight, potential for natural ventilation, flexible control systems, exemplary levels of occupant comfort with respect to noise, heating and lighting.

**Transport:** 87% / 10.61%

Environmental features: reduced car-parking, improved cycling facilities, travel plan.

**Energy:** 67% / 9.85%

Environmental features: low-carbon technology: air source heat pumps, energy sub-metering, and low-energy external lighting systems.

**Water:** 83.33% / 4.17%

Environmental features: Low-water-use sanitary ware, leak detection system, sanitary water supply automatic shut-off when not in use.

**Material and Waste:** 50% / 3.33%

Environmental features: materials with low-embodied impact, recyclable waste storage, and use of recycled materials where possible.

**Land use and Ecology:** 50% / 7.5%

Environmental features: site of low ecological value, minimised loss of species, advice from ecologist towards the enhancement of the design with respect to biodiversity, the creation of a wild-life garden for the use of local primary school pupils.

**Pollution:** 60% / 9%

Environmental features: renewable systems, flood-risk mitigation systems, watercourse pollution prevention systems, avoidance of light pollution, environmentally friendly insulation.

## BREEAM Challenges

The main challenges presented by this development related to the site itself. Due to the rural location, local public transport provision is restricted when compared to urban sites. Furthermore, the site had not been previously developed and so careful and creative design was required to ensure that the sites ecological value was maintained without compromising the function of the development.

The achievement of the ecology credits required a high level of documenting throughout development. Failure to accurately record, document and provide evidence can result in the loss of heavily weighted BREEAM credits. This will be of the key considerations during the actual construction phase of the project.

These restrictions served to reduce the potential BREEAM scoring by some ten percent, a significant disadvantage from the beginning, especially when the target rating of 'Excellent' is considered. When the conflicts inherent within the BREEAM criteria are also taken into account, as is the nature of sustainable development, it becomes clear that the scoring potential for this development was significantly restricted. Achieving a score of 70% or above does in fact demonstrate that the development has collected almost all of the BREEAM credits that were potentially achievable on this site.

The above site-based conflicts are best demonstrated by the comparatively low scores attained in the materials and waste, and land-use and ecology sections, whereby the rural location and new-build nature of the scheme prevented the attainment of certain credits, whilst presenting challenges in ensuring that biodiversity is not damaged as a result of development. The development has attained almost all of the potential credits within these areas, based on restrictions imposed by the nature of the site.

Conflicts within the criteria are well demonstrated

in that in order to achieve the energy performance required, systems have had to be employed that cost credits within the pollution section, notably with respect to the NOx emissions associated with using grid energy for heating.

## Most Challenging Aspect of Constructing Sustainable Buildings

The aim of a sustainable development is to provide a facility that serves all of the needs of users in the present, without compromising the ability of future generations to meet their own needs. Sustainability is a broad-brush concept to cover three main aspects of people, environment and price. A sustainable development seeks to establish equilibrium between the three.

In order to provide a development that can meet this agenda takes careful consideration, particularly in that by their very nature, many issues relating to sustainability will work against each other.

The key is to find a solution that best fits the site and scope of the building in question. This requires that all members of the design team work in unison, fully aware of the impacts that small and seemingly inconsequential changes within their discipline could affect other key considerations. It is this coordination that is the main challenge that is common to all sustainable developments. It requires that the team work closely and most importantly creatively, pushing the boundaries of what may be considered to be standard practice.

The main challenge of sustainable development is to establish closer working relationships, greater understanding and accountability and most importantly to promote the creativity and flexibility that is required to achieve the aims of sustainable development.

## Lessons Learnt

The earlier that BREEAM is considered and accounted for within the design and planning, the more 'cheap' credits can be achieved, thereby reducing the cost and difficulty of attaining a desired rating.

- The Ecology section should be examined in some detail. It may be beneficial to include the likely difficulty of attaining ecology credits when selecting sites for future developments.
- Remote sites with infrequent public transport and a lack of locally available recycled material, and those of notable ecological value, can severely restrict the potential maximum score of any given development
- Many BREEAM credits are adversarial in that, attaining or improving one area of performance can negatively impact another area.
- It is important to fully consult the BREEAM criteria regarding changes to the design following initial pre-assessment.



## Advice to Others / Benefit of Hindsight

- BREEAM requirements should be considered early.
- The site plan, unit layouts and fabric can be designed with BREEAM in mind thereby maximising potential and minimising cost.
- The project has maximised environmental education opportunities through working closely (from the project concept stage) with the adjacent school (Stonefold Primary). This has resulted in a new wildlife corridor and educational resource which has added to the scheme's ecological and community value.
- LCDL has also developed a comprehensive educational guide and programme of activities for the duration of the project lifecycle.

## The Expected Benefits

The measures included to satisfy BREEAM will lead to reduced water usage, reduced energy usage and reduce costs. Via the use of dual-flush WCs, and considered design of external landscaping to require little or no irrigation other than that provided naturally, the development is projected to achieve a saving of 76% over the NWDA and BRE benchmark of 5.5 m<sup>3</sup> per person, per year. Only 1.32 m<sup>3</sup> per person, per year of potable water will be employed on site for non-potable applications, such as WC flushing and irrigation.

The employment of low-flow taps and showers will also reduce the use of potable water for potable applications on site.

In terms of energy performance, the development has achieved a saving of 33.4% over the standard building, as defined by Building Regulations 2006, Part L2A. This is due to the holistic design approach and to the specification of low-carbon, air-source heat pumps to provide almost 20% of the energy required to service the units. Minimisation of waste and exploitation of the potential for use of recycled materials has been another key consideration of the project. As the site required considerable structural remediation, a large volume of excavation waste was produced, some 3000m<sup>3</sup>.

The creative solution to this was to utilise around half of this waste to create the wildlife garden to the school boundary. The other half will be recycled for use off-site. Via this process, it is estimated that the development will incorporate some 500 tonnes of waste material, whilst only sending some 40 tonnes to landfill. In essence, the development will incorporate over 10 times more waste material than will be sent to landfill as a result of development.

Further to the above, improvements made with respect to internal environmental conditions, external landscaped and wildlife areas, together with the provision made for cyclists all serve to improve the quality and flexibility of the development.



### Financial Cost to Achieve BREEAM

The uplift in costs of achieving Excellent was estimated to be an additional 10% of the overall project costs. It is hoped that this premium will be recouped as a result of reduced resource usage going forward and that the lessons learned in the development of this project will lead to a reduction in this premium for future projects.



NWDA exemplar projects aim to disseminate innovation and best practice in construction in the North West

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