eauc case study

TITLE:

Student Design Consultants at Warwick

DATE:
April 2007

CLASSIFICATION:
Energy & Water
SUB CLASSIFICATION:
Strategy

INSTITUTION PROFILE
HE
15,969 FTE students
4,921 staff
Suburban
290 hectares campus

SUMMARY

The University of Warwick is due to invest significantly in a new halls of residence and wanted to use the opportunity to further integrate sustainability into its curriculum while minimising the proposed building's carbon footprint.

The design of the building became an undergraduate project and a group of students carried out valuable research prior to consultants being engaged. The results of the research will be used to inform the design process.

EAUC COMMENT

This case study shows the wide ranging benefits of bringing students into the design process of new university buildings. As well as giving them a real life project to enhance students employability, these students brought a fresh innovative approach to the design process, had a sense of ownership of the end product and deepened their relationship with the university and its staff.

PROJECT PARTNERS

University of Warwick Estates Office; University of Warwick Engineering Department (students taking: design/appropriate technology, mechanical, manufacturing, civil, electronics engineering); University of Warwick Student Environment Committee.

THE PROBLEM

The University of Warwick was one of the first signatories to the Carbon Trust's Higher Education Carbon Management Programme and had set itself the target of reducing its carbon footprint by 10 per cent in just five years. In its 10-year development plan the university had also set itself the target of achieving BREEAM Excellent status for all its new-build projects.

A new 1,000-bed student residence was planned on a greenfield site at the university and the Estates Office wanted to involve students in its design, as well as making it as sustainable as possible, with as small a carbon footprint as possible.

THE APPROACH

Before engaging consultants to design the building, the estates team decided to use the resources available to them at the university.

Eight fourth-year students formed a multi-discipline design team drawn primarily from the university's Engineering, Design and Appropriate Technology course. They researched other sustainable buildings and came up with ideas about how the building could have the smallest possible carbon footprint. These included detailed consideration of building orientation and size, how to manage heating, ventilation and cooling the building, as well as how to provide effective lighting with both security and energy conservation objectives in mind.

Other technologies investigated were ground-source heat pumps, photovoltaic panels, wind turbines, rainwater harvesting and grey-water use. They also carried out cost analyses for elements of the design of sustainable buildings.

GOALS

- Design and build a low-energy student residence in line with the university's sustainability objectives such that it has the smallest possible carbon footprint
- Give students a 'real-life' project on which to work – for the benefit of the university
- Use expertise to research other sustainable buildings and use this to inform the design brief for the building
- Continue Warwick's programme of integrating sustainability into the institution

OBSTACLES AND SOLUTIONS

• Balancing the visionary with the practical – there are lots of sustainable technologies which could be used, how do you decide what to include?	• Getting the right people with the right expertise together early enough so that all of the options can be considered
• Getting the right people on the team and ensuring no one is missed out	• Include as many people as practical on the team with a good mix of skills. Academics with knowledge of sustainability who can be visionary and consultants/ project managers who can be practical
• The status quo – breaking from the usual way of doing things because it worked before and came in on budget	• Ensuring you have someone to ask the difficult questions. The university used academics and consultants to ensure the project considered new and different options
• Establishing the precise specification for the task	• Periodic meetings of the "design team" with the Estates department (the client) to discuss progress and refine the specification
• Establishing realistic overall and project-specific budgets	• Researched case studies from recent similarly-sized construction projects which included cost information

PERFORMANCE AND RESULTS

The students will be presenting a final report to the Estates Office in May 2007. The findings of this will be used when briefing the teams involved in the design and construction phases.

The students have been able to use their skills to work on a project for their course which is also of benefit to the university.

On the recommendations of the students, various sustainable concepts will be considered for the new building. These will ultimately minimise its carbon footprint and include:

- Building orientation and floor layout
- Pre-fabrication / modular construction techniques
- Rainwater harvesting and grey water re-use
- Building shape and size
- How to ventilate the building

LESSONS LEARNT

Universities can integrate sustainability into their curriculum and use this to their benefit if they provide students with projects such as this. This furthers the university's sustainability agenda and engages the students, as well as giving them a sense of ownership of the final product.

This kind of practical experience will increase the future employability of students.

Students may see the fruits of their labours develop into a long-lasting legacy at the university.

FURTHER INFORMATION

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Carbon Trust Higher Education Carbon Management Programme
www.carbontrust.co.uk/carbon/he/

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