Aston University
Birmingham

Sustainable Construction - Brief for Project Design and Development

February 2007

Aston University's new developments will set high sustainability standards. The University wish to ensure that sustainability is a key principle that is adopted throughout the campus and embodied by new developments. To achieve this aim, it is imperative that sustainable development considerations are incorporated into every stage of design processes.

Solid Waste

Design out waste both during construction and from the useful life and afterlife of the building or structure. Whole life costing should be considered with all main elements including the cost for recycling the element at the end of its life. An aspirational target of 100% recycling is to be monitored.

In particular the re-use of the existing building should be carried out where possible.

Educate all contracting staff, especially on site, to maximise their understanding and their capacity to reduce waste and increase recycling.

Contractors are to take full responsibility for the waste they generate and dispose of it in the most environmentally sound way possible, in line with their full legal obligations.

Carbon Impacts

The scheme is to be delivered in accordance with new Part L 2006 building regulations. This aims to reduce the carbon impact of the building by 25% relative to the existing Part L standard. This will also allow the building to display an energy performance rating under the Energy Performance of Buildings Directive, 2003 showing the design, built and actual carbon performance of the building.

Opportunity for Renewable Energy

Consideration should be given to the use of Photovoltaic cells, although it is noted that this is unlikely to be cost effective unless significant grants can be obtained.

Consideration to the use of Solar Water Heaters as part of an external façade.

Minimise energy in use

Consider more energy efficient solutions in design including

- Ventilation/Air Conditioning systems to be mixed mode or passive adopt principles of BRESCU documents GIR 31 Avoiding or minimising the use of air-conditioning and GPG 291 A designer's guide to the options for ventilation and cooling.

- Lighting to utilise natural light and schemes to have T5 or PL dimmable ballasts, control to be SMART i.e. daylight and sensor with a minimum setback and preferably linked back to the Building Management System.

- Boilers to be High Efficiency or condensing. Consideration given to plastic distribution over copper. Control of heating system to be simplistic.

- *Domestic Hot Water to have Chloride di-oxide dosing in order to reduce temperature. (Note: This is a very modern development aimed at eradicating Legionella and reducing the need for local blending valves. Needs further investigation.)*

- Control of the buildings is primarily carried out centrally, however limited user control should also be given in order for individuals to influence their environment.

Energy performance of buildings should be in line with or exceed best practice see HEFCE publications 2003/30 Energy management in higher education - Value for money study and M 16/96 - Energy Management Study in the HE Sector: Management Review Guide.

Water Resources

Grey Water Opportunities

The design team should consider the use of grey water for toilets, urinals etc. this should be integrated with the landscape architect to look at surface water management. Green roofs should be considered.

Water Efficiency

Design for increased water efficiency in building services and water conservation within the built environment. Water performance of buildings should be in line or exceed best practice in the sector. This should include the use of automatic taps on wash hand basins and automatic flush controllers for urinals.

Transport

During Design

Parking areas should give priority to cyclists, mopeds, green vehicles and pool cars by having these spaces closer to the building than for petrol/diesel cars with exception of an appropriate number of disabled bays.

Cycle facilities such as secured parking, showers and lockers to be an integral part of the building design.

Cycle lanes delivering cyclists safely to parking is to be planned within the design layout and link to external cycle lanes and existing City Campus.

Consideration given to information screens which can link into real time bus/metro information passing the site.

During Construction

Re-use of the existing building will save the energy used to transport and dispose of waste, and save the energy of manufacturing and transporting material to site.

Consideration shall be given to the use of local suppliers and programming of deliveries to minimise transport and disturbance to local residents.

Pollution

The contractor shall use an appropriate certified environmental management system such as ISO 14001 or EMAS and adoption of the Considerate Constructors Scheme (see www.ciboard.org.uk) or similar.

The four major potential sources of pollution from the construction process are:

- waste materials
- emissions from vehicles
- noise
- emissions from release to water, ground and atmosphere

These are to be reduced and monitored.

Building materials to be used should be rated using BRE document – 'The Green Guide to Specification – An Environmental Profiling System for Building Materials and Components'.

Bio-diversity

The design team and in particular the landscape architect should look for opportunities throughout the development process from the extraction of raw materials, through the construction phase, to the landscaping of buildings and estates to provide and protect habitats appropriate to the urban setting and taking account of long term sustainable management principles.

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Building Aspects

The outer façade of the building has to have demonstrable benefits in solar heat gain reduction and work positively in the implementation of Building Regulations Part ADL2 (2005). In respect of the visual impact people should look beyond the direct area and view the building on a city wide aspect to ensure it is complimentary.

The building is to be designed with the ethos of BREEAM 'Building Research Establishment Environmental Assessment Method' to achieve an excellence rating.

Consideration shall be given to the overall building life expectancy and its disposal or re-use at the end of that period.

Community and Social Impacts

Respect for people is at the heart of the social responsibility of sustainable construction in particular the local community and future building users.

The development of a programme to having community involvement during the design and construction of the new building and throughout its lifetime. This can be achieved through a variety of measures such as (but not limited to) community meetings on progress and issues, involving local school children through production of art work for the site hoardings or educational visits to the construction site, time capsule burial, advertising of schools benefit to community (School of Law drop in clinic) . A role of communications officer needs to be adopted for the project in order to co-ordinate this.

The landscape architect should also give consideration to community benefit that is sympathetic to the University and the community such as a safe pedestrian corridor to city centre, shared or community type garden, facility for local school, etc.

Other Issues

It should be noted that sustainability affects the life of the building not just the design and construction. The staff and students occupying the buildings will play a major part in nearly all of the above aspects by respecting their environment in order for the buildings to be ultimately successful as a sustainable development.

G. R. East
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