



Jubilee Campus

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ENVS 662-660

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Source: http://www.iea-pvps.org/cases/gbr_01.htm



Source: <http://www.nottingham.ac.uk/about/campuses/jubilee.php>



Presentation Outline

- Project goals
- Green features
- Key innovations
- Evaluation
- Areas to improve
- Questions



Goals:

- Reduce carbon emissions 70%
- Restore biodiversity
- Create a model of sustainable design
- Raise awareness
- Build quickly, efficiently, cost-effectively



A host of Green features...

- Built on a brownfield site
- Re-integration of nature
- Wind and solar powered natural ventilation system
- Natural lighting
- Low embodied energy in building materials
- Green rooftops
- Stormwater and graywater management, treatment



Other Green Features:

- Cedar cladding from sustainably managed forests
- Galvanized rather than stainless steel
- Use of in-situ concrete
- Light reflectors and light sensors – no manual light switches
- Dry compost toilets
- Recycled paper as insulation in some buildings

Reintegration of Nature: Constructed lake, wetlands, lakeside promenade



Constructed lake and wetlands to cool and purify air, contain and treat stormwater and graywater, support biodiversity.

Lakeside promenade serves as social setting.

Source:

<http://www.nottingham.ac.uk/about/campuses/jubilee.php>



Key innovation:

Wind driven ventilation system

- Prevailing wind blows across trees, constructed lake
- Air enters scoops in glass atria, exhaust out stairwells
- Wind cowls above planted rooms in back of buildings drive circulation
- CHP unit provides heat in winter; atria prevent heat loss
- Solar panels integrated with glass atria provide shade and electricity for fan assist in summer

Wind and solar powered natural ventilation system:



Glass atrium

Wind Scoop

PV panels

Wind cowl

Atria: Natural light, green space, social area



PV panels
provide
shading

Reflectors
bounce
natural light
into rooms

Sources: http://www.iea-pvps.org/casesgbr_01.htm

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Green rooftops



Low-growing moss and lichens

More effective than traditional insulation

Source: www.iea-pvps.org/casesgbr_01.htm

Evaluation

- PV panels able to generate 51 MWh per year – enough to power fans
- Lighting energy savings: 384,000 kWh per year
- Total energy savings: 3,056 million kWh per year
- CO₂ reduction of 980,000 kg per year (met target)

(Source: www.energyglobe.info)



Evaluation (continued)

- Green spaces re-integrated
- Increased biodiversity
- Successful as a model of sustainability
- Successful at raising awareness
- Quick, cost-effective construction -- \$105 per square foot

(Source: Buchanan, 2005)



Evaluation--Room for Improvement:

- Cedar cladding came from Canada (lower cost, but longer trip)
- Questions about recycled paper as insulation
- Green rooftops underutilized
- More landscape diversity possible, especially with lakeside arcade
- Introduce edible plants
- Future plan to build eco-village (hydrogen powered)

Sources:

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Any questions?

(Other than why aren't all buildings built more like this)



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