Green Architecture: UK

The Crystal
Wilkinson Eyre Architects

Conditions for Green Architecture
- Green Party
- Kyoto Accord
- European Union

Cast of Characters
- The Crystal
- Scottish Parliament
- John Hope Gateway
- London City Hall GLA

Green Wall/Fountain
North Greenwich

Glace Wood
Board-Formed Concrete
The Crystal. London
Siemens Urban Sustainability Centre - The Crystal

The Urban Sustainability Centre sits at the heart of London's Green Enterprise District on the western edge of the Royal Victoria Dock. The architectural concept for the building is based on two interlocking parallelogram forms with multiple triangular facets. Its crystalline geometry responds to its special location and contrasts with the curve of the O2 Arena beyond. A palette of reflective and transparent materials catches the light in different ways to create a dynamic composition on the waterfront.

Together with the exhibition hall which will host public events, the centre also includes an auditorium, conference and meeting facilities and office space. As a showcase for sustainable design and construction, the building incorporates high performance materials and building systems. The centre opened to the public in September 2012.

Half Office - Half Exposition
...with a performance dashboard

Building Energy Management System (BEMS)

Complex mechanical room, home of the ground source heat pump, among other equipment.
The Crystal is not all glass!

- Fritted Glass
- Spandrel Glass
- Metal Roof

- Spandrel Glass with Vents
- Fresh Air Intake
Roof hatch view of PVs and weather station

2015         2013

Breaking News fall 2019...

NLA looks to a bit of empire building
Environmental Performance

Excellent progress was made in 2013/14 to reduce the Parliament’s carbon emissions with emissions reduced to 3023* tonnes of CO2e. This is a reduction of 30% on our baseline year of 2005/06 and a reduction of 6% on 2012/2013. This reduction ensures that the Parliament is on course to achieve its ambitious target to reduce emissions by 43% by 2020.

The majority of the reduction was due to the installation of more efficient technologies in the areas of lighting, air conditioning and pump controls and improved control of the buildings’ heating and ventilation systems.

Carbon Footprint
Reduce the Carbon footprint by 32% from the 2005/2006 total by March 2015.
Progress by March 2014 – 32% reduction, by March 2017 – 36% (actual 31%)

Electricity
Reduce incoming electricity use by 32% from the 2005/2006 total by March 2015.
Progress by March 2014 – 30% reduction, by March 2017 – 36% (actual 30%)

Waste
Reduce landfill waste by 72% from the 2005/2006 total by March 2015.
Progress by March 2014 – 68% reduction. Recycling rates are approximately 80%
By March 2017 – 72% reduction. Recycling rate 89%
### Performance overview

**From the annual report (financial year 2017/18)**

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<tr>
<th>Category</th>
<th>Target</th>
<th>Actual Performance</th>
<th>Key Milestones</th>
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**John Hope Gateway**

**Royal Botanic Gardens Edinburgh**

**Edward Cullinan Architects**

**Sustainable Systems Diagram**

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**Elements of a Green Building**

1. **Environmental Design**
2. **Energy Efficiency**
3. **Water Conservation**
4. **Materials and Resources**
5. **Indoor Environmental Quality**
6. **Sustainable Site Development**
7. **Innovation and Learning**
8. **Health and Well-being**
9. **Maintenance**
10. **Construction Waste and Recycling**
11. **Operable Systems**
12. **Plumbing Systems**
13. **Heating, Ventilation, and Air Conditioning**
14. **Lighting**
15. **Accessories**
16. **Outdoor Environmental Quality**
Water catchment for the loo

Beautiful carbon-positive wood construction

Rooftop Solar, Wind turbine, Green roof
The mayor's vision is for London to become an exemplary sustainable world city, based on the three balanced and interlocking elements—strong and diverse economic growth; social inclusivity, allowing all Londoners to share in London's future success; and fundamental improvements in environmental management and use of resources.

**DESIGN CONCEPT**

The design was revised from the architect's original **all glass** concept, dubbed the fencing mask, in response to sophisticated computer modeling by consulting engineer Arup who produced a "thermal map" to show how the heat from the sun would travel over the building's surface throughout the course of a year.
A geodesic lattice framework, referred to as a “diagrid structure,” supports the building and is, in effect, the largest radiator in London.