Sustainable design

We would like to thank Patrick Blanc, Allford Hall Monaghan Morris, Sturgis Associates, The Crown Estate, Pitman Tozer, Zoological Society of London, The Royal Parks, CityWest Homes, SE2, Grosvenor and London Transport Museum for their contributions to this brochure.

This document is printed on 100% recycled paper and using vegetable based inks.

City of Westminster

Sustainable design

Sustainable development is at the heart of any robust and innovative planning policy, not least in the City of Westminster. Integrating those environmental ambitions with the council's aim to encourage the highest possible standard of design for Westminster's built environment, however, presents architects, developers and planners with a number of challenges.

New policies contained within Westminster City Council's Local Development Framework and the Supplementary Planning Document on Sustainable Design are now being developed and will set out how Westminster can grow and develop as a city capable of withstanding the inevitable impacts of climate change.

Sustainable design can create safer, more ecological, economical and healthier places for people to live and work in. Key to this are buildings using sustainable construction methods that are designed to be energy efficient and self-sufficient; to prevent overheating; to conserve water; to reduce waste and increase recycling; to enhance biodiversity; to provide natural and accessible open spaces; and to facilitate green travel.

As the busiest planning authority and an area with some of the country's most iconic and important sites, Westminster City Council has a particular responsibility to work with developers, businesses and residents to maximise the environmental performance of buildings, both old and new.

In this brochure, we highlight examples of refurbished listed buildings that achieve high environmental standards, demonstrating how our City's rich heritage can serve the future as well as it has the past. With 75% of the city located in a conservation area, we should strike a balance that ensures environmental sustainability whilst conserving our heritage.

We celebrate here some local best practice for the sustainable design of buildings and provide ideas for future development in Westminster. I hope you find it informative and interesting.

Councillor Robert Davis DL
Deputy Leader of
Westminster City Council

Cabinet Member
for the Built Environment

Key of Sustainable Design Features

Energy-efficient design, insulation and ventilation can help to keep a building warm in the winter and cool in the summer through, for example, site layout and form, natural ventilation and shading, passive solar design and thermal mass.

Energy-efficient fixtures and fittings can be installed to reduce energy consumption, for example, SMART meters, energy-efficient white goods, low-energy lighting.

Sustainable energies are renewable and low-carbon energies resulting in either zero-carbon emissions or a significantly lowered carbon emissions due to energy-efficient technologies. They include, though not exclusively:

Solar uses energy from the sun to create electricity to run appliances, lighting or to heat water directly.

Ground source heat pumps (GSHP) extracts heat from the ground, upgrades it to a higher temperature and releases it where required for space and water heating. The GSHP function can be reversed for cooling purposes.

Combined Heat and Power (CHP) sometimes known as Cogeneration is the use of a single piece of plant to generate both heat and electricity.

Innovative waste facilities enable and encourage on-site recycling.

Rainwater harvesting and recycling is a means of attenuating, allowing the reuse of rain as greywater in the garden or in the home.

Water-saving devices can reduce daily water consumption through, for example, flow-regulated fittings and greywater recycling.

Sustainable Urban Drainage Systems (SuDS) are a sequence of management practices designed to drain surface water in a more sustainable fashion than some conventional techniques.

Biodiversity enhancement is the provision of natural habitats and sites suitable to support feeding, nesting and breeding for wildlife.

Sustainable materials and construction is the management of the demolition and construction process to minimise environmental impact.

Contents

Living wall, vertical garden

Athenaeum Hotel, Piccadilly, W1

Ward:	*Mayfair*
Client:	*Ralph Trustees Ltd*
Architect:	*Patrick Blanc*
Type:	*Living Wall*

The Athenaeum hotel, on the corner of Piccadilly and Down Street, now features a Living Wall by world famous botanist and designer Patrick Blanc.

An eight storey high metal frame with a water resistant surface is fixed to the structure of the building, and to this is fastened a water retaining material (made of recycled old synthetic clothes), into which the plants are inserted. The plants do not require soil, as their roots grow in the material, and they receive nutrients through an intermittent irrigation process.

In the same way that plants grow on natural vertical cliff surfaces throughout the world, the living wall allows a vertical habitat in the built environment. The planting of the living wall encourages and provides habitats for birds and insects, and provides a green bridge from Green Park into the built form of Mayfair.

The plants absorb environmental pollutants, add oxygen to the air, and contribute to preserving biological diversity by replacing land taken by buildings with a natural habitat.

In addition to the improvements the living wall makes to the insulation of the building by external shading, other works were carried out as part of the building project to improve the energy efficiency of the Athenaeum Hotel. These include the installation of a new intelligent control system to minimize energy usage within the hotel rooms, and the replacement of all the windows with glazing and frames which minimize heat loss and solar gain.

Passive solar design

Westminster Academy at the Naim Dangoor Centre, 255 Harrow Road, W2

Ward:	*Queens Park*
Client:	*Westminster Academy, Westminster City Council, DCSF and Exilarch Foundation*
Sponsor:	*Exilarch Foundation*
Architect:	*Allford Hall Monaghan Morris*
Type:	*New build, school*

Awards: They include Civic Trust Award 2009, RIBA Stirling Prize - Shortlist 2008, RIBA Award for Architecture 2008, BCSE Industry Award for Inspiring Design - Secondary School 2008

The large glazed atrium at Westminster Academy provides significant amounts of natural light into the building. However a cleverly designed sculptural feature on the ceiling runs from North to South preventing excess glare into the building. The living roof helps to manage water run off and insulate the building.

Photo by Tim Soar

Carbon profiling

Collingwood House, 101 New Cavendish Street, W1

Client:	*CORE*
Architects:	*Sturgis Associates*
Type:	*Mixed use development*
Standard:	*BREEAM 'very good'*

101 New Cavendish Street not only demonstrates the latest in contemporary sustainable office design, as illustrated above, it also showcases a revolutionary carbon assessment technique called CARBON PROFILING™. This has enabled the architects to calculate and examine from the drawing board stage the emissions the new offices will create when occupied and the efficiency of the resources used to make it.

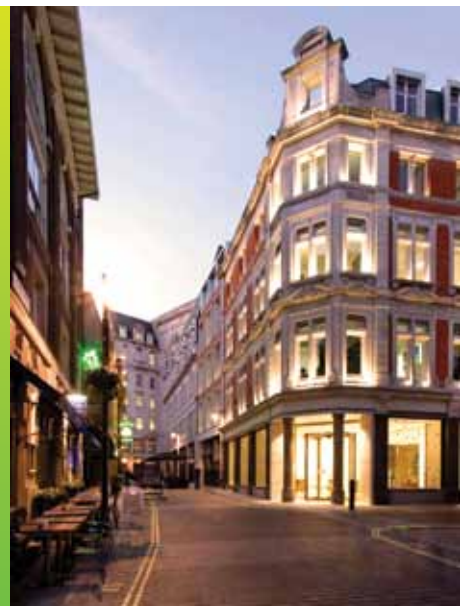
Carbon Profiling has demonstrated that this building has already saved 17,000 tonnes of CO2 even before the first low energy lightbulb is turned on by occupiers.

Architecturally the analysis of the building's 'whole life emissions' and integrated design is wrapped up in a simple but expressive facade that responds to the different shading requirements of each elevation and to its context neighbouring the East Marylebone Conservation Area.

Waste facilities

1 Vine Street, Regent Street, W1

Ward:	*West End*
Client:	*The Crown Estate*
Architect:	*Allies and Morrison*
Type:	*New build behind retained facades, mixed use, listed building*
Standard:	*BREEAM 'excellent'*



Awards: They include OAS/ Property Week Development Awards 2008: Overall Development of Year – London,' RICS London Awards 2009: Sustainability Award, Westminster Society Biennial Award for Architecture.

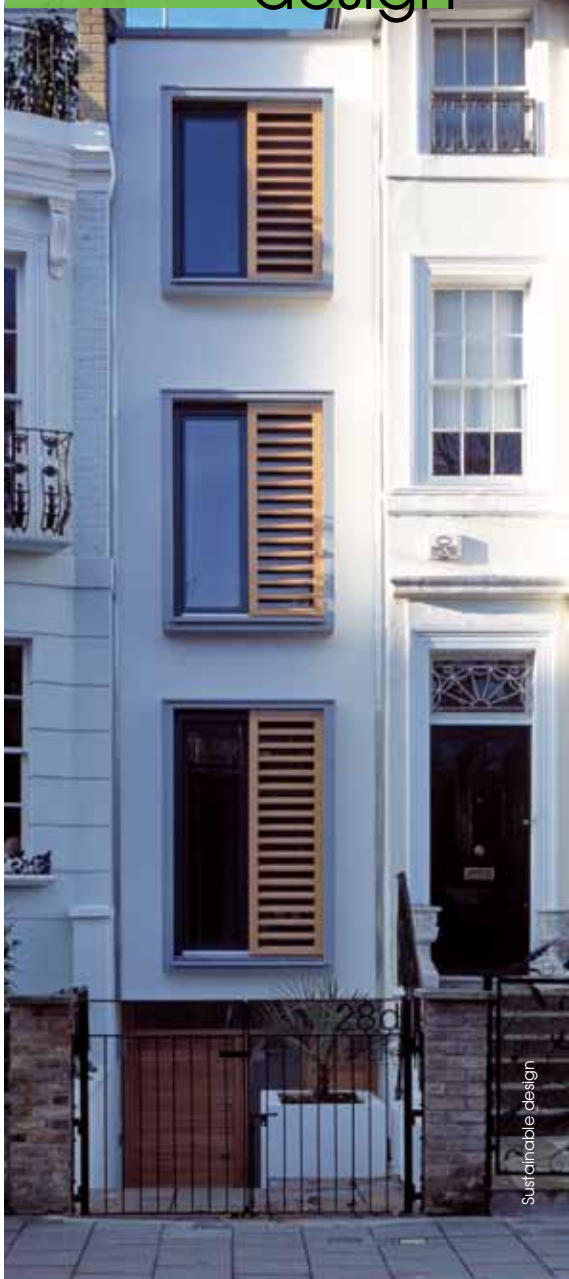
1 Vine Street is a Grade II listed building that has been refurbished to maximise energy performance and incorporates features of sustainable design including systems for rainwater harvesting and heat recovery. It has an innovative waste strategy including vacuum food waste removal (which is turned into compost), a glass imploder and a compactor which deal with the waste not only from the building itself but also all the catering operations in the area including Le Meridien Piccadilly Hotel. This avoids unsightly waste being left in the street, substantially reduces refuse collections and maximises recycling.

Gap House, Bayswater, W2

Ward:	*Bayswater*
Client:	*Luke Tozer*
Architect:	*Pitman Tozer (www.pitmantozer.com)*
Type:	*New build, residential, conservation area*
Standard:	*Desktop assessment: Level 4 of the Code for Sustainable Homes*

Awards: 2009 RIBA Award

Gap House was built in an 8ft wide gap, which was once a side alley to the adjoining house. A derelict cottage from the 1950s was demolished and the space filled with a slender four-storey tower, which steps down and widens out to 24ft wide at the rear. The building was designed to use one third of the energy of a new house (built to the current building regulations) providing significant cost savings to the residents. Passive solar design, a highly insulated building envelope, ground coupled heat pump, sustainably sourced materials and a rainwater harvesting system all contribute to a new building that performs well not only as a home but also environmentally. It's an example of how good sustainable design can be achieved on even the tightest of sites.



Design for wildlife

Komodo Dragon House, London Zoo, NW1

Ward:	*Regent's Park*
Client:	*Zoological Society of London (ZSL)*
Architect:	*Kozdon Wharmby*
Type:	*New build, public building*

The Komodo Dragon House is a bespoke building which incorporates a large (300 m2) living roof designed to provide a habitat for local plants and wildlife. This particular type of roof promotes species diversity and encourages a range of wildlife, particularly insects. The roof's design was based on principles developed in Switzerland for biodiversity and adapted to the London environment. It also helps to keep the building cool in the summer and retain heat in the winter, providing a suitable environment for the Komodo Dragons.

Improving access to nature

Main Lake, The Regent's Park, NW1

Ward:	*Regent's Park*
Project lead:	*The Royal Parks and Westminster City Council (with funding from development)*
Type:	*Site of Importance for Nature Conservation*

Wetland habitat has been created in Regent's Park with Section 106 contributions from an adjacent development. When the developer applied to convert a building of offices overlooking the Royal Park – a Site of Metropolitan Importance for Nature Conservation - into housing, the Council negotiated a contribution to the Westminster Biodiversity Action Plan as compensation for the developer being unable to incorporate biodiversity improvements on site. Newly-created reedbeds in the main lake are now visible from the development and have resulted in a recorded increase in insects and birds.

Photos by Tony Duckett

Water and energy efficiency

Glastonbury House, Warwick Way, Pimlico, SW1

Ward:	*Warwick*
Client:	*CityWest Homes*
Architect:	*Cole Thompson Anders*
Type:	*Refurbishment, residential*
Standard:	*EcoHomes 'very good'*

The Glastonbury House scheme represents a pioneering pilot project for implementing 'intelligent and green' technologies while regenerating existing housing stock.

Photovoltaic panels and the capability to include a 6kW wind turbine provide a sustainable and renewable supply of energy to the residents. Cavity-wall insulation, low energy lighting and enclosed balconies (acting as solar spaces to preheat apartments) help to reduce the energy requirement of the building while dual-flush toilets and rainwater harvesting help to conserve water. Water is further retained and surface water run-off is reduced by a 'living roof' of Alpine Sedum on the entrance canopy.

16 New Burlington Place, Regent Street, W1

Ward:	*West End*
Client:	*The Crown Estate*
Architect:	*Trehearne Architects*
Type:	*New build, mixed use*
Standard:	*BREEAM 'excellent'*

The Crown Estate's new headquarters at 16 Burlington Place has been designed to be energy and water efficient. Solar energy and an efficient combined heat and power system, together with passive measures, provide around 11% of the buildings energy needs (saving around £5,000 per year). Rainwater is collected from the roof and is used to flush the lavatories. Electronic switches on the taps ensure that no water is wasted and electronic valves detect leaks and shut down the flow where appropriate. The air conditioning system uses chilled ceilings which are more energy efficient than conventional systems.

Retrofitting the historic environment

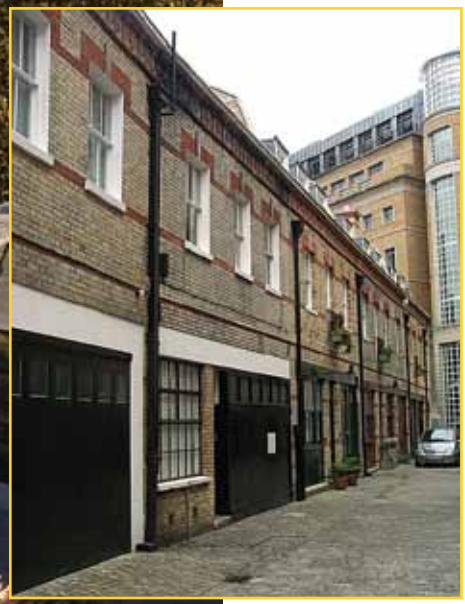
The Flagship Home, Beaufort Gardens, Knightsbridge, SW3

Client:	*Westminster City Council, Royal Borough of Kensington and Chelsea and SE Land and Estates*
Architect:	*ECD Associates*
Consultant:	*Rickaby Thompson Associates Ltd*
Type:	*Refurbishment, residential, conservation area*

The Flagship Home is a 19th century terraced townhouse, in which a range of proven energy-efficiency measures has been installed with the purpose of demonstrating good practice in how to:

- Improve housing in the private rented sector, particularly Houses in Multiple Occupation (HMOs)
- Refurbish buildings which do not lend themselves to common energy efficiency measures such as cavity wall insulation
- Deliver energy efficient refurbishment in a conservation area.

Dry-lined external walls, draught-stripped windows, a highly-insulated roof, floor insulation, double glazing to the rear of the building, energy-efficiency boilers, appliances and lighting are all features of sustainable design that have increased the energy efficiency of the building with little visible change to the historic fabric of the building. Solar panels on the roof provide around 60% of the hot water required by the residents over the course of the year.



11 Grosvenor Crescent Mews, SW1

Ward:	*Knightsbridge and Belgravia*
Client:	*Grosvenor*
Architect:	*Moxley Architects*
Type:	*Refurbishment, residential, conservation area*
Standard:	*EcoHomes 'excellent'*

11 Grosvenor Crescent Mews is the oldest building in the UK to achieve an 'excellent' EcoHomes rating. The property was built around 1870 and is within the Belgravia Conservation Area so refurbishment focused on retaining as much as possible of the existing structure. The energy requirement of the building has been cut by insulating the external walls, roof and floor and the windows with secondary glazing therefore ensuring the historic windows are retained.

Sustainable energy supply

Renewable energy

London Transport Museum, Covent Garden Piazza, WC2E

Ward:	*St James's*
Client:	*Transport for London*
Architect:	*Avery Associates*
Type:	*Retrofit, public building, listed building*

The London Transport Museum in Covent Garden is an example of historic building which incorporates solar panels. The London Transport Museum is the first Grade II listed building in the UK to install a large-scale solar panel system. The panels generate 2.5% of the museum's annual electricity needs saving £3000 per year.

Eaton Square, SW1

Ward:	*Knightsbridge and Belgravia*
Client:	*Grosvenor*
Engineer:	*Edward A Pearce & Partners*
Type:	*Retrofit, residential, listed building*

A geothermal heating and cooling system has been installed in the north-east Eaton Square garden to trial the retrofitting of this technology in historic buildings. Two 150m deep boreholes have been drilled in the garden and the system will provide cooling and heating to the flats and common parts in three of these Grade II listed buildings. Discharged water will also be used for garden irrigation. The estimated carbon saving of the project is 45 tonnes per year.