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Practice Profile

Practice philosophy

Bill Dunster architects ZEDfactory Ltd (BDa ZEDfactory) is an award winning practice specialising in low energy, low environmental impact buildings. BDa ZEDfactory's projects range from private commissions to wholesale communities. Within the wider context of sustainable development we are committed to good quality design based on careful analysis of end user needs.

Our approach is one of innovative use of tried and tested technologies to deliver buildings which are stimulating and practical on a daily basis, and distinctive, economic and reliable in the long term. Buildings are homes and places of work, and are a powerful influence on the quality of life of individuals and communities. BDa ZEDfactory gives high priority to achieving the right balance between human issues and technical disciplines.

Our services

BDa ZEDfactory offers the full range of RIBA services including:

- **Architecture: social housing, private housing, education, leisure, commercial, ZEDs (Zero fossil Energy Developments)**
- **Masterplanning**
- **Urban design**
- **Landscaping.**

Formed in 1999, BDa ZEDfactory has offices in BedZED, the unique carbon-neutral live-work community in the London Borough of Sutton, designed by the practice and completed in 2002.



All ZED schemes fuse good urban spaces with communal uses and solar-orientated buildings

Design approach for low-energy, low-environmental impact

BDa ZEDfactory believe that sustainable development is both affordable and achievable within current market constraints.

Our design approach integrates as many building elements as possible into construction. This results in fewer components and finishes being needed. The associated cost savings allow a higher specification for low-energy and low-environmental impact components.

Renewable energy devices and passive energy features are an inherent part of our design thinking. Structural considerations and fixings are determined during design, so that components can be added later as required, rather than as an expensive afterthought.

The practice keeps up-to-date with both the technologies and performance parameters that influence building design. This enables us to use appropriate energy-saving and low-environmental impact devices to suit our clients' practical needs. We aim to create beautiful structures that harness available renewable energy and conserve water and other limited resources.



Above: BedZED as it looks today after 4 years of occupation. The pallet of natural materials was chosen to age gracefully with minimal maintenance.



Left: BowZED - proof that a full Zero Energy Development can be achieved on a tight urban site by a commercial developer - Winner of a Housing Design Award 2005

title **Beddington Zero (fossil)
Emissions Development -
BedZED**

client **Peabody Trust**

value **£14.5m**

type **Mixed use**

dates **Completed June 2002**

BedZED is the UK's largest mixed use, carbon-neutral development. When it was built in 2002, it set new standards in sustainable building. BedZED comprises 82 affordable dwellings in a mixture of flats, maisonettes and town houses, and approximately 2500 m² of workspace/office, and is built on a brownfield site. The BedZED urban system reconciles high-density with amenity, providing each dwelling with a sky garden or terrace.

A combination of passive measures and proven, cost effective active technologies form the strategy of an integrated, sustainable development. A rigorous specification process helped reduce the environmental impact of the construction process. The scheme includes a biomass combined heat and power plant, an on-site sewage treatment and rainwater recycling system, and natural wind driven ventilation.



Above The gable end treatment of BedZED introduces a new urban typology using local traditional materials.

Left The interiors of BedZED have been very well received by potential buyers of the homes for their light, scandinavian feel and natural materials

Below The section through the BedZED scheme underpins the whole ZED approach - Solar orientation with homes facing south & workspaces north with skygardens on their roofs. All upper roofs are green sedum and there is a full range of unit types and tenures





BedZED's wood chip combined heat and power unit



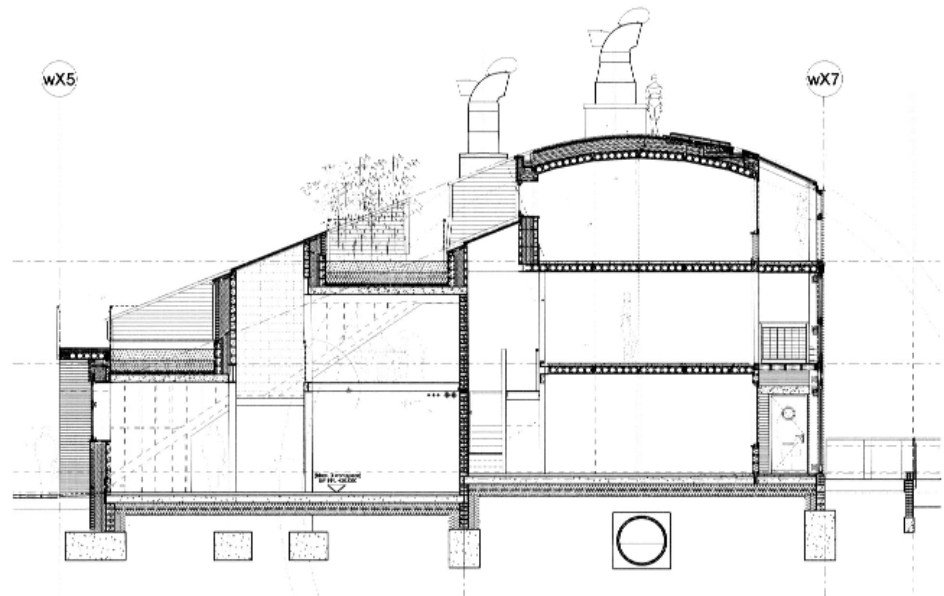
BedZED's living machine on-site sewage treatment plant



All brought together in one building with sports facilities



Above BedZED's skygardens and sedum roofs



title **Croydon Healthy Resource Centre (CHRC), South London Mixed Use Community Building**

client **Metropolitan Housing Trust**

value **£2.75m**

type **Mixed use**

dates **On site Early 2006**

A mixed-use, affordable housing scheme, with 16 one- and two-bedroom flats above two floors of community facilities. All units will meet the Housing Corporation Scheme Development Standards (SDS). 60% will meet Lifetime Homes and EcoHomes 'Excellent' standards.

CHRC will be the first building in the masterplan development of a large urban site. Its form reflects complex site constraints. It is a 5-storey, steel frame building with precast concrete hollow-core floor decks, thermally massive inner leaf construction, and superinsulation throughout. Wind cowls assist natural ventilation with heat recovery. The low-energy strategy is to deliver 40% reduction in carbon emissions using a biomass boiler and roof-mounted wind turbines. The scheme is a zero parking development.



title **BowZED**
client **Yorklake Ltd**
value **£500k**
type **Residential**
dates **Completed August 2004**

BowZED is a block of 4 flats, just off the Bow Road in East London. Each flat benefits from its own south-facing terrace and conservatory, which have enough photovoltaic cells incorporated into the glass to meet at least half of the occupants' annual electricity demand. The other half is planned to be met by a recently installed micro wind turbine mounted on the communal stair tower. This building will generate as much energy from renewable sources in a year as it consumes.

Finished to the high levels you would expect for a modern urban 'for sale' development, the building has also been built to ZED standards. This means the levels of insulation and thermal mass are such that no central heating system is required. The flats obtain enough heat from occupants, the solar gain from south-facing windows, and incidental gains from cooking and appliance use. This enables a single 15kW wood pellet boiler to supply the whole block with hot water and back-up heating.

This building shows how a Zero (fossil) Energy Development (ZED) can be delivered on a tight urban site as a conventional development opportunity. The sales prices for the flats achieved by the developer were better than expected, and well above local comparable property showing there is a healthy appetite for eco-housing in the market place.



title **Conference and Arrivals Buildings, Earth Centre, Doncaster**

client **Taylor Woodrow**

value **£2.2m / £450k**

type **Commercial / Leisure**

dates **Completed Jan 2002**

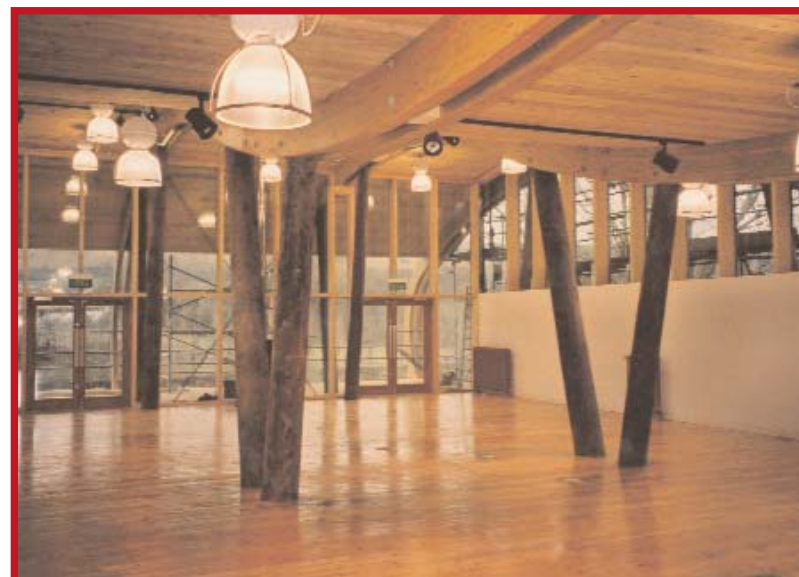
The brief for the new building at the Earth Centre called for a state-of-the-art, naturally ventilated and overtly sustainable design solution, to complement the vision and aspirations of the Centre itself. It was procured under a design and build contract, and within the parameters of a strictly limited budget and tight programme schedule.

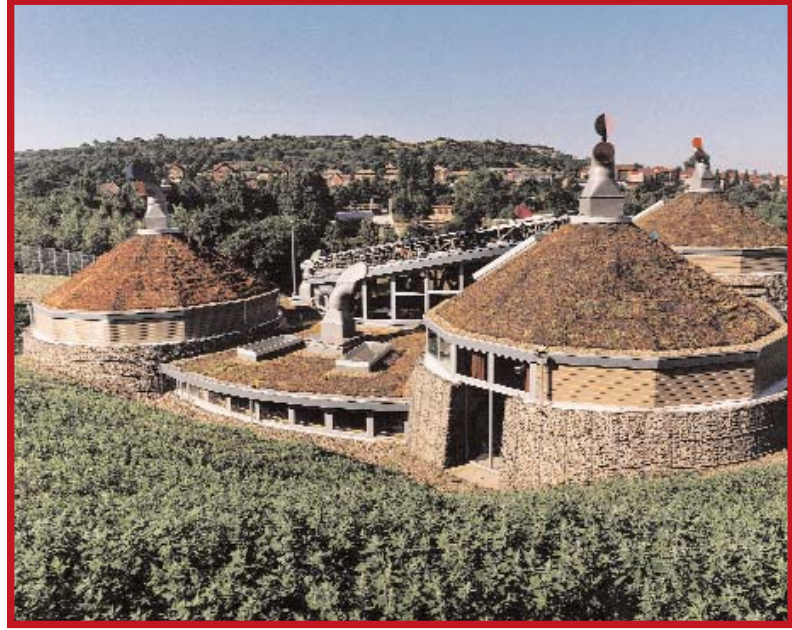
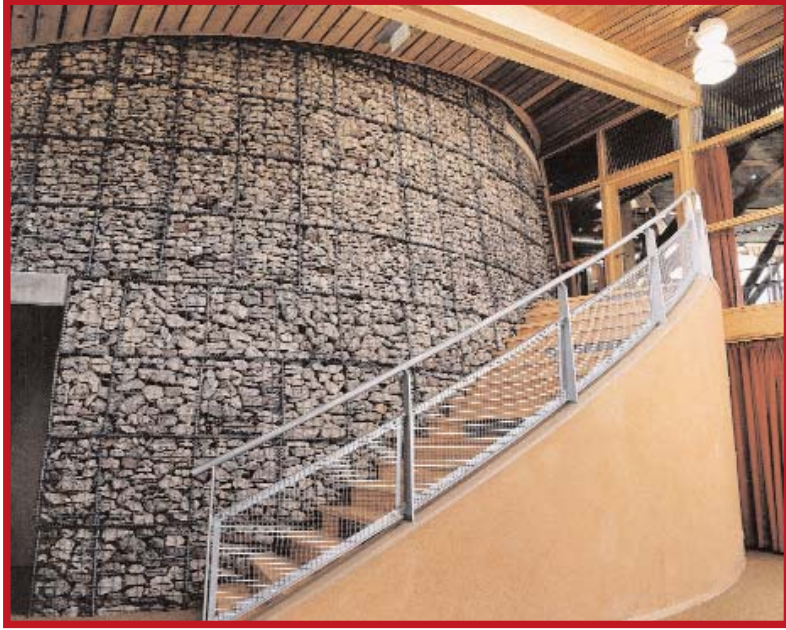
From the beginning, the design was driven by the functional demands of the Centre, addressing their needs in terms of access, image and education. The brief also called for an unique auditorium space to create a memorable and flexible venue. The design solution offers level access to all floors. Detailing and structural methods were such that local labour skills and local sources of material could be used.

The Arrivals Building (shown on this page) is located to the south of the site, across the river Don from main activities. It welcomes visitors arriving by train or car, and offers ticketing facilities, a shop, and a cafe area, as well as a viewing deck over the river.

With a mostly transient occupancy, the building's design concentrates less on heat loss, and more on pleasing and functional space. The structure is contemporary, and maximises natural light and use of reclaimed materials.

Conference Centre pictures are shown on the next page.





title **Jubilee Wharf**
Penryn, Cornwall

client **Robotmother Ltd**

value **£3m**

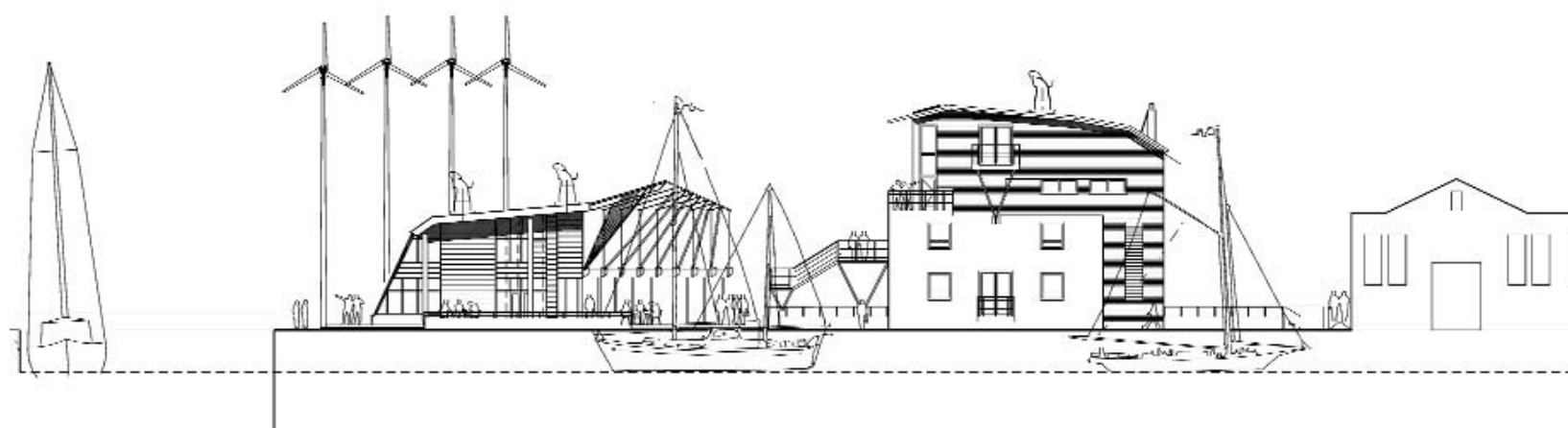
type **Mixed use**

dates **Completion Summer 2006**

Jubilee Wharf is a mixed-use scheme on the riverside. It comprises a nursery, bar/cafe, offices, live-a-board facilities, external public spaces and landscaping, 12 rented workspaces, and 6 residential units with external balconies.

Due for completion in Summer 2006, the scheme has received Sure Start funding and private funding. The scheme features a wood pellet boiler and 4 wind turbines, and will be a Zero (fossil) Energy Development. The wind turbines will generate most of the expected electrical demand, and all the space heating and hot water needs.

The client is committed to using local materials and reclaimed or recycled wherever possible. It will have local art integrated into the construction, and art for sale in the lettable workspaces.



title **Linden Glade ZED**
Halesowen, Dudley

client **Accord Housing Association**

value **£1.4m**

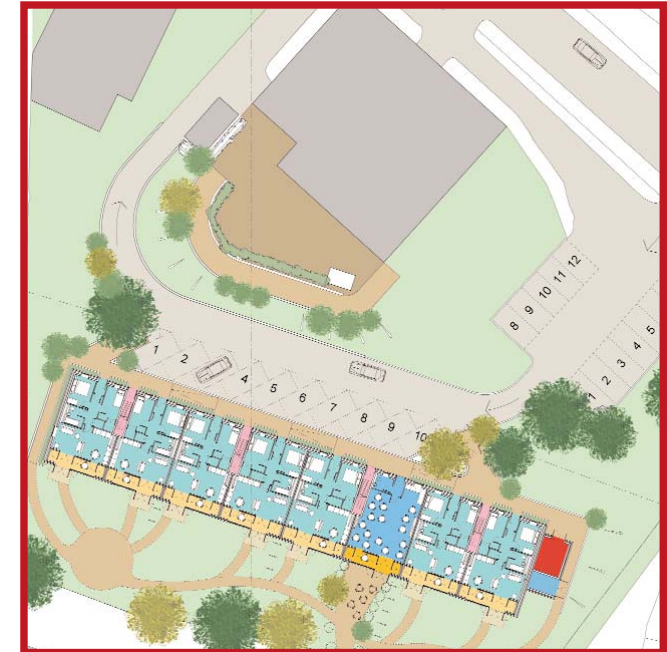
type **Social housing**

dates **Completed September 2005**

This social housing scheme comprises 15 2-bed flats and 1 communal room for use by the residents and the adjacent scheme. The terrace design is stepped in order to take up changes in site levels. The site is a small land-locked site in an urban area near Birmingham.

Space heating and hot water is provided by a wood pellet boiler that is self igniting and fully automated. The scheme also features all of the basic ZED construction principles such as a south aspect and super-insulation. Clearskies funding was obtained for the wood pellet plant, and local supply chains are being set up for use on ZED schemes in the area.

The client hopes to replicate the scheme on other sites using the same team, optimising the experience from the scheme.



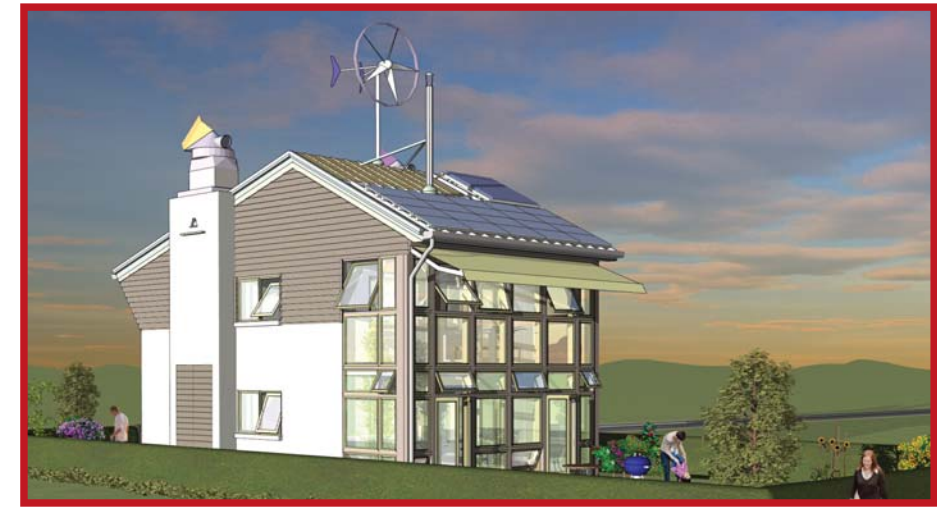
title **RuralZED kit house,
Camborne, Cornwall**

client **Cornwall Sustainable Building
Trust (CSBT)**

value **£75k (for mid-terrace unit)**

type **Residential**

dates **Completed December 2004**



The RuralZED project was to design and build a timber-frame 'kit' house for low-cost affordable housing in Cornwall.

BDA ZEDfactory's design was built in an aircraft hanger to allow the Housing Association client to evaluate the build process and the home it produced. The aim was to create a cheaper version of the ZED fabric used in BedZED and elsewhere. The design used a timber frame, clad internally with a thermally massive skin, resulting in cheaper materials and a faster build cycle.

We are continuing to refine the timber frame 'kit' costs and other costs. This is being done by means of improving the design of individual construction elements, and maximising local off-site production.

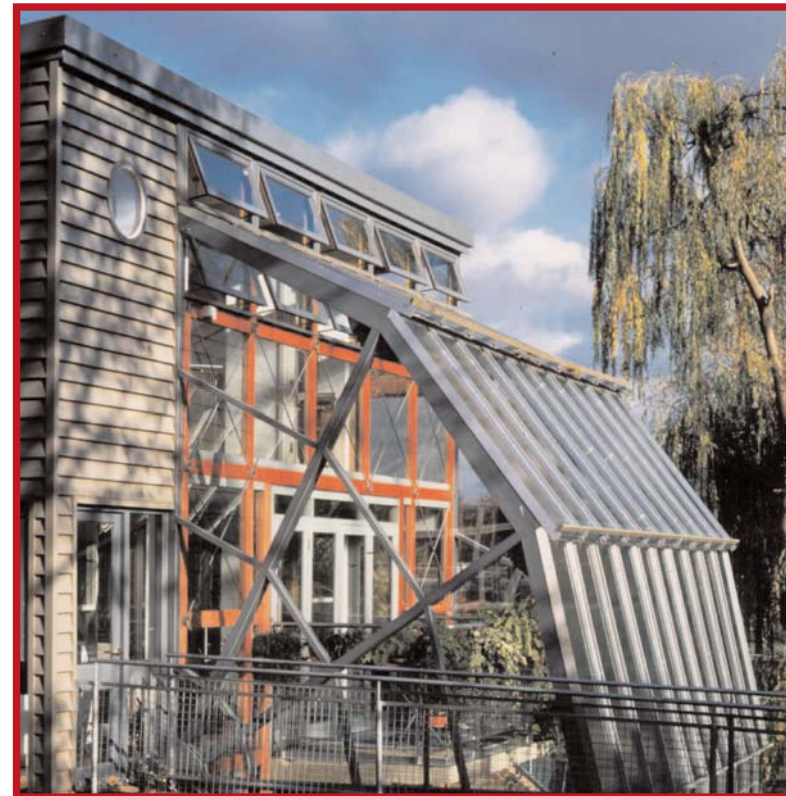
'RuralZED' is currently being used for DIY and large scale developments alike.



Hope House, East Molesey

For

Bill & Sue Dunster



Private commissions

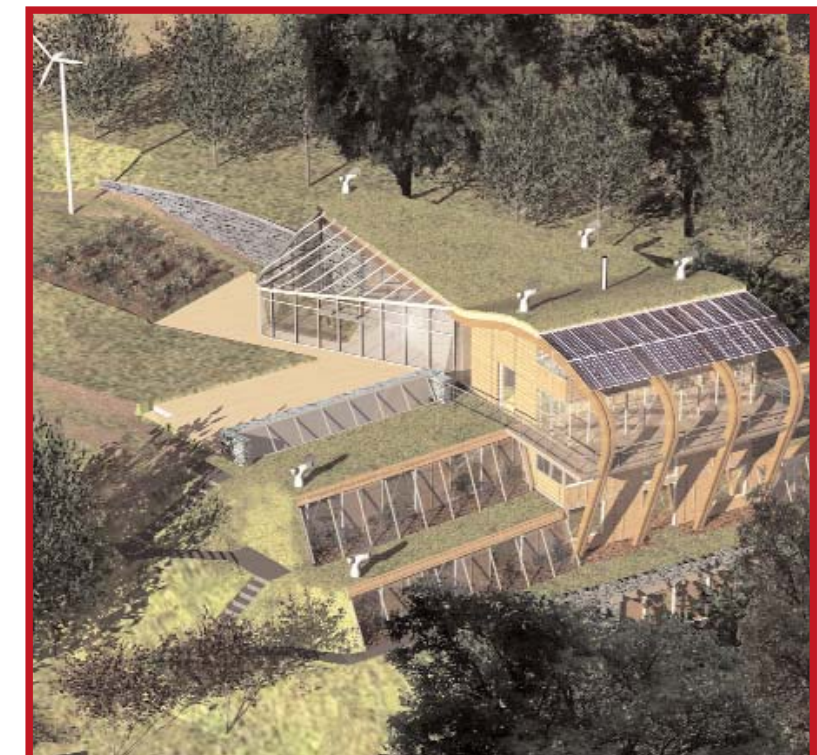
Hope House, built in 1995, was the first experimental 'ZED'. Regular upgrades improve energy use as the latest technology advances become available. A log-burning stove was installed in 2004, and a wood pellet boiler will be fitted in 2006. Together they will replace the gas boiler for hot water. A micro wind turbine was fitted in 2005, which generates about 50% of electricity needs, and the existing PVs also supply around 50%. As Hope House is home to Bill and Sue Dunster, it allows them to experience and evaluate components first-hand.

Bath Springs is a private commission for a country house. It uses the steep escarpment of the site, thus avoiding agriculturally useful land. Its setting befits the status of the house, with a commanding presence over the site. A wind turbine, PV and biomass boiler, along with full ZED fabric construction make it a carbon-neutral executive home. It is currently in planning.

Bath Springs, Bath

For

Private Client



title **Kings Crescent, Hackney
Estate Regeneration**

client **Peabody Trust, Ujima, Unitary**

value **na**

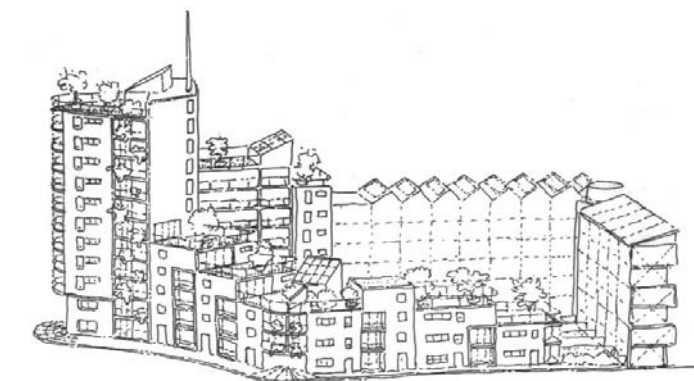
type **Masterplanning**

dates **Masterplan completed 2003**

Kings Crescent is a late-60s estate in Brownswood district of Hackney. It was made up of system-built towers and a mixture of slab block and terraced housing, laid out around a number of squares which are used as service yards. It had suffered from a lack of maintenance and management, and problems with drugs and prostitution have built up over the years. The interior layouts of the majority of the flats are well designed and liked by their residents.

Our role was to work with landscape designer, West 8, to meet a brief that required a master plan containing energy-efficient building designs. Site regeneration had to be achieved without external financial input. This was to be done primarily by increasing the density, and by adding market sale accommodation, most of which was to be in three new towers overlooking the park.

Although our consortium was successful in becoming preferred bidder, the project did not go ahead. Reasons for this include, we understand, the residents' vote to reject the increase in density.



Above: Computer-generated view from the South East showing the park side towers
Right: Proposed maisonette
Far right: Proposed urban block incorporating the existing slab block

title **St Mellons, Cardiff Estate Regeneration**

client **Cardiff County Council**

value **na**

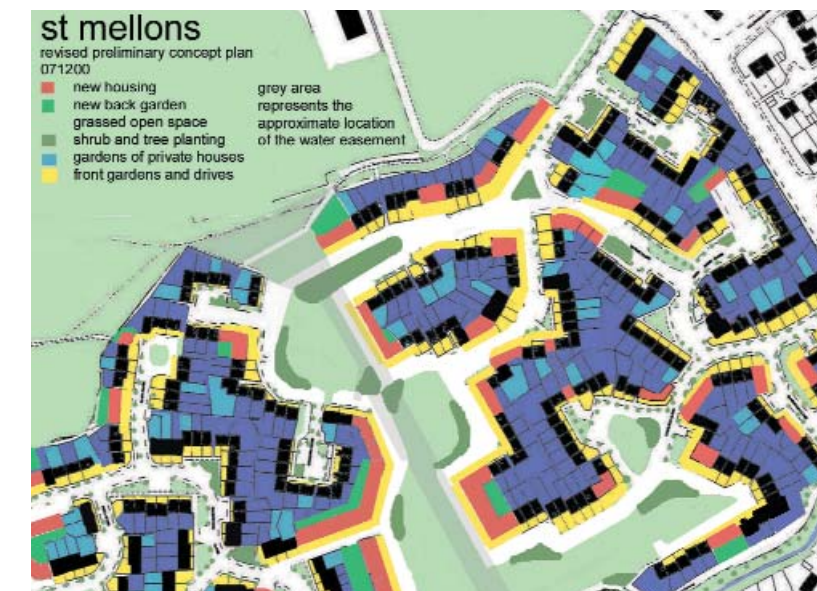
type **Masterplanning**

dates **Masterplan completed 2001**

St Mellons (estate) is a Local Authority edge-of-town suburban housing development. The area is characterised by car dominated ring roads, and small cul-de-sac residential roads. The houses are typically 2- or 3-bedroom with front and back gardens.

BDa was appointed by Cardiff County Council to masterplan the redevelopment of a part of the estate built in the early 1980's. This part of the estate had become nationally infamous for its social problems, and suffered a negative waiting list and high resident turn-over.

The masterplan formed part of the tender documentation for Cardiff County Council to engage a developer/contractor in a partnering agreement. The work involved the preparation of a number of sketch master plans and presentations to facilitate public discussion. These were presented to the residents at a number of public meetings and via mailshots.



Top: 'Working' presentation drawings of the masterplan used at public meetings

Right: One of the existing semis that was subsequently demolished to make way for the 'overlooked play space' (marked with a red arrow in the diagram above).

Far right: The overall masterplan. Red indicates new housing

title **St Matthews Key Worker flats**
Estate Regeneration

(a PRPZEDfactor Project*)

client **Presentation H A**

value **na**

type **Residential**

dates **2005**

Working under the name of our Joint Venture company PRP ZEDfactor, St Matthews Key Worker flats is a block of 12 new build flats built on an infill plot as part of the wider masterplan to regenerate the St Matthews Estate.

The block has been designed to ZEDstandards and hence has zero space heating requirements. Domestic hot water is provided by a combination of a single wood pellet boiler and solar thermal panels. It also has a designed-in upgrade path to allow full Zero Energy status in due course.

This project attempts to promote ZEDstandard construction for the Housing Association mainstream, and draws on the vast HA experience PRP have acquired over years of client focused projects.

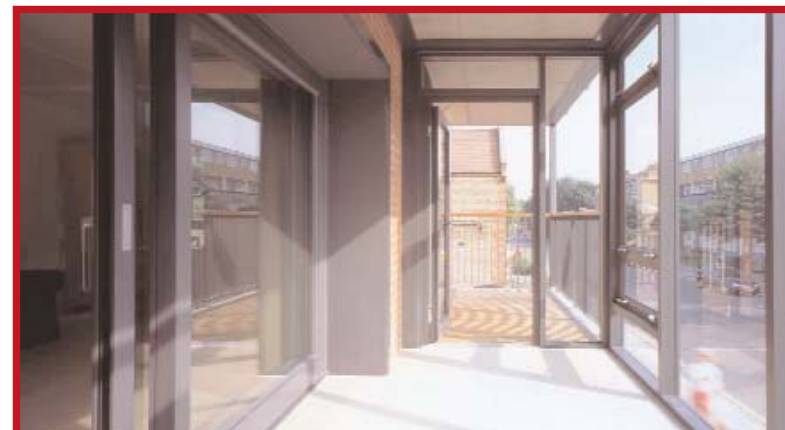
*PRP ZEDfactor is a joint venture company formed in 2002 with the large housing architectural practice PRP. Its primary aim is to introduce ZEDstandards to a wider client base, especially for clients who require the security of working with a large practice such as PRP.



Above: Elevation to Brixton Water Lane

Right: The solar thermal array

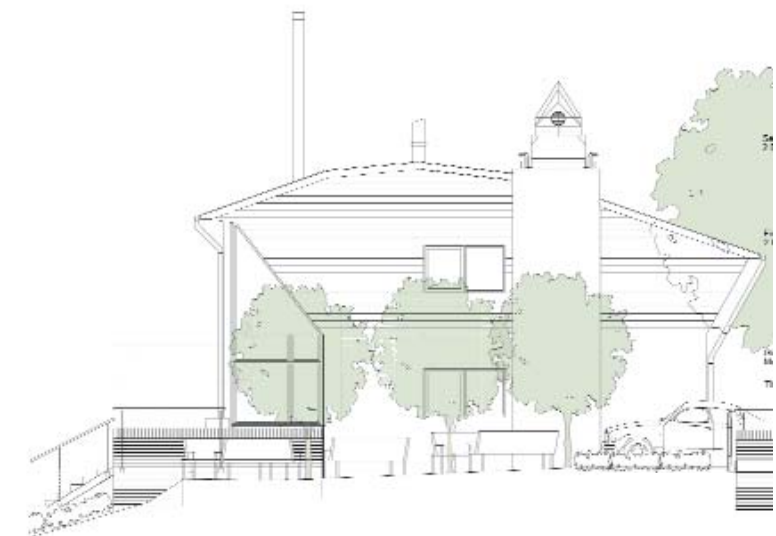
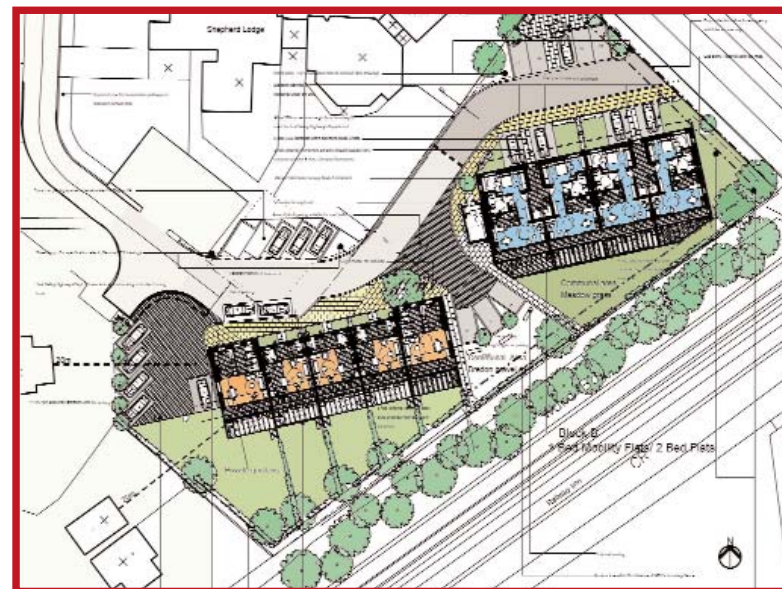
Below: A sunspace and balcony providing additional living space



title **Artist's Way ZED**
client **Saren Housing Association**
(Part of Aster Group)
value **Approx. £2m**
type **Residential urban design**
dates **On site Spring 2006**

This small site on the edge of the town centre will contain 5 houses and 12 flats in a residential scheme.

Artist's Way is designed to be innovative and energy-efficient. The design incorporates our expertise and technology to reduce the need for fossil fuels. At the same time, the design focuses on producing housing that increases the quality of life for its residents through desirable living space and quality of light, as well as pleasant green amenity space.



title **Leicester Abbey Park Road
Solar Urban Blocks**

client **Metropolitan Housing Trust**

value **£15m**

type **Masterplanning / Residential**

dates **On site Jan 2006**

The latest government Energy White Paper proposes a 60% reduction in national CO2 emissions from mid-1990 levels by 2050.

The redevelopment of the old Leicester bus garage site will set new standards for affordable homes by meeting this target on completion of the final phase. This assumes that the project is successful in attracting appropriate grant funding for some of the building integrated photovoltaics. Even if this is not the case, the building design facilitates the future on-site installation of low-carbon power generation technologies, as they become commercially viable. This is expected to be within the next 8 to 10 years.

The concept is to reduce heat and power requirements, to the point where it becomes affordable to meet 60% of the building's energy use from renewable energy sources, generated within the sites boundaries. The site will do this by using ZED passive standards for airtight, super-insulated building fabric with heat recovery ventilation. Zero-heating specification homes will then incorporate a mixture of biomass fuelled heating, photovoltaic electric generation, domestic scale micro wind turbines, passive solar gain, thermally massive passive cooling technologies, and wind driven ventilation with heat recovery.

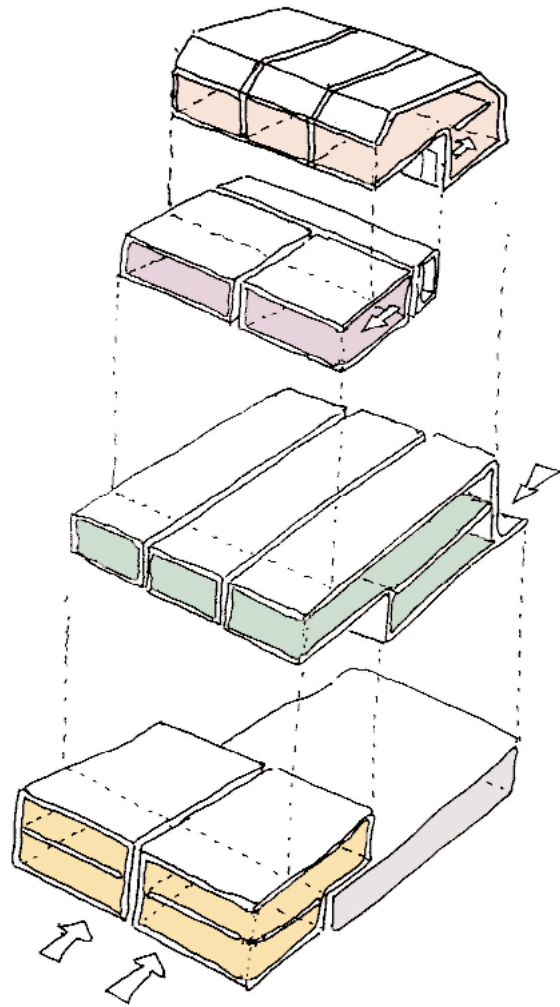
The masterplan allows future upgrades to site-wide biomass combined heat and power, or fuel cell generation systems.



Above: Aerial view from the North-East.

Below: Canal side elevation.





Every home has a southfacing living room



Above: Showing conservatories on South side, with building integrated PVs and some opening lights.



title **Forest Forever**
Housing Development in
Beijing, China

client **Modern Group**

value **Approx. £6m**

type **Urban design / Residential /
Landscaping**

dates **Planning July 2005**

This housing development is to set up the first carbon-neutral community in Beijing, China, within a spectacular environment between city and country. The project promises a community with a relaxing balance between working and living.

The basis of ZED design is to reduce the need of cooling and space heating by investing in a high performance building fabric. This includes super-insulation and thermal mass, and reduces energy loads by using integrated renewable systems relying on sun, wind and ground water.

Every home is south facing, creating a great feeling of space and light inside buildings. The sunspace serves as a solar heat collector in winter. All homes have a private exterior space, which may be a garden or terrace space.

The landscaping includes a 'forest' area, situated at the edge of site, in which residents are able to exercise and relax. A waterscape runs through the centre of site. Starting at high level on the commercial building, reed beds filter the water as it flows down into the recreational parkland and fishing pond between villas. The water is pumped back up-hill by a wind-pump.

Above: an image of the feature fishing lake and villas.

Below: a view over the central recreational area towards the townhouses, and behind the apartments and commercial buildings.





Above Left: View between two rows of apartment blocks, showing communal courtyard space between the buildings.

Above Right: View of villas and the feature lake which the residents are able to fish from.



Below Left: An aerial view of ZED Forest showing its setting.

Below Right : the north entrance, 'ZED Forest' with the commercial units.



title **Upton Site D1, Northampton
Housing Development**

client **Metropolitan Housing Trust**

value **circa £36m**

type **Residential**

dates **On site June 2006**

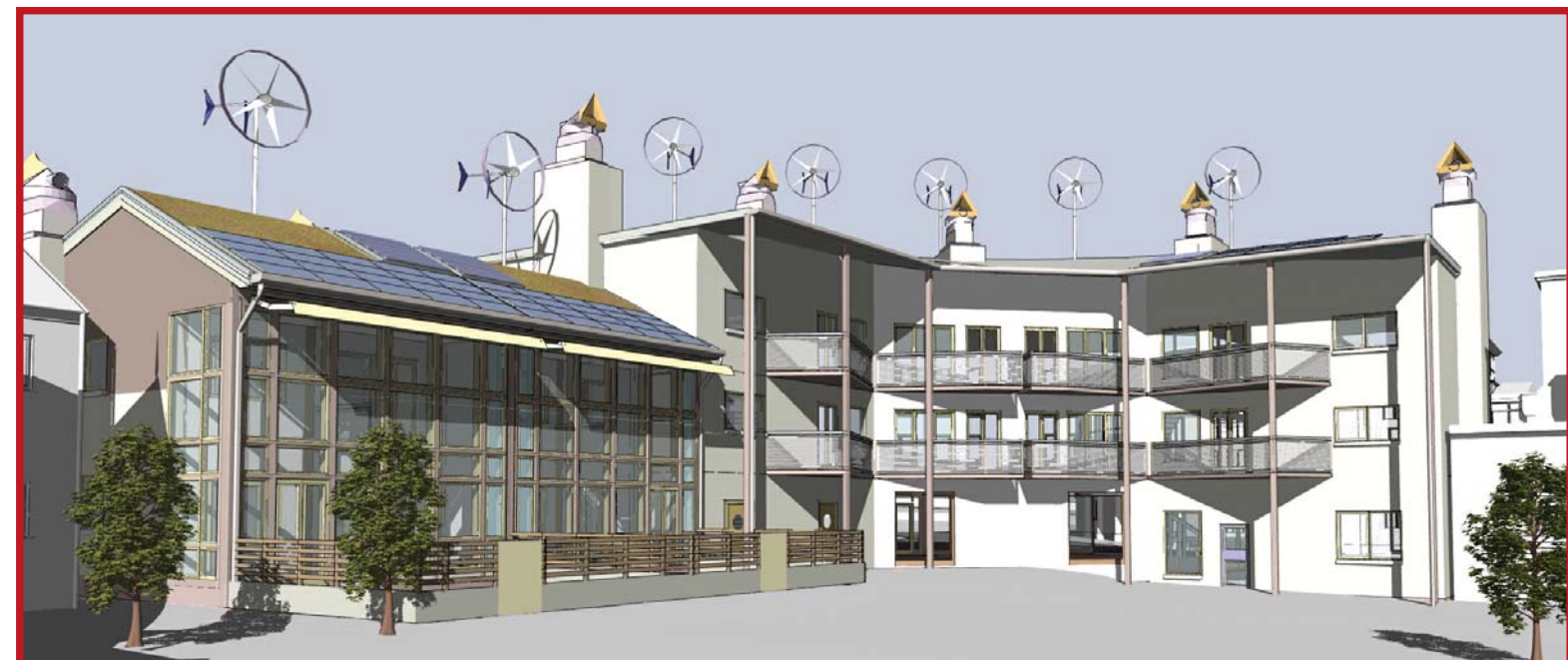
This project was the result of winning a competition set by English Partnerships, with MHT as developer. The scheme is for the new town centre of Upton, with approaching 350 units in total, of which most will be private for sale.

BDa ZEDfactory is both 'sustainable construction' consultant for the whole site, and designing 25% of the units (around 90). All units, the remainder being provided by local architects, are to be designed using the ZED fabric standards.

A competition requirement was for 25% of the units to be designed using Modern Methods of Construction (MMC). BDa ZEDfactory is designing all the MMC units using the RuralZED timber frame system. Approximately 50 will be a mix of family houses and mews dwellings, and the remainder are 1- and 2-bedroom flats.



Above: View of typical block with ZED units highlighted in colour.
Below: Courtyard view of corner apartment building, and housing.

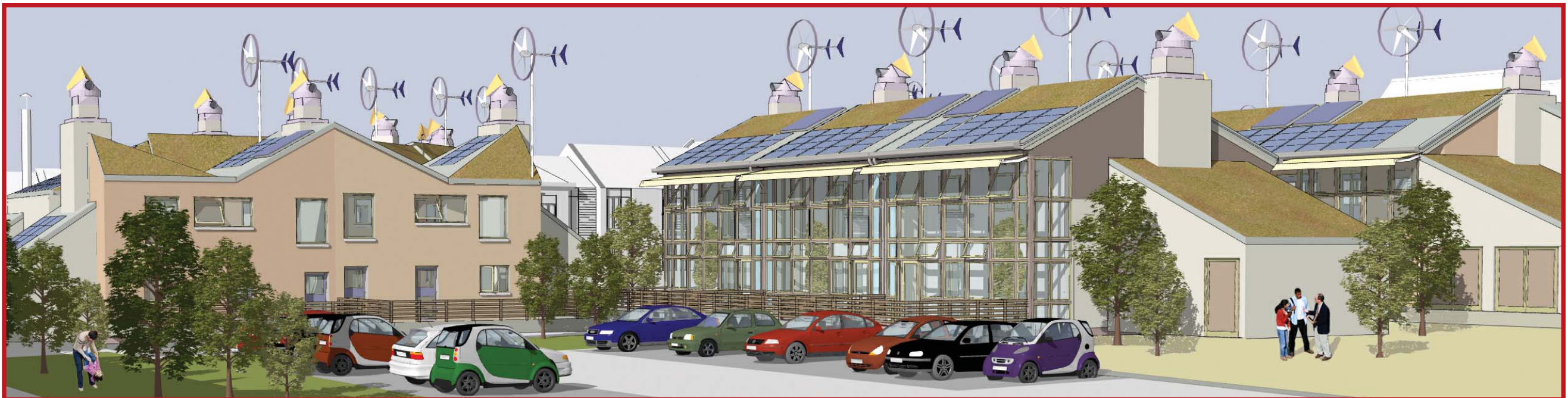




Above: Residential wind-focus buildings looking over main square, with visitor centre in between.
Below: Roofscape of units designed to benefit from microgeneration



Above: Mews view





Bill Dunster's CV

Date of Birth July 9th 1960

Nationality British

Higher Education MA Hons Edin.
Degree Course at Edinburgh University

Following several years of research and development into high-density sustainable housing, Bill presented the BedZED scheme, a carbon neutral live/work community, to the Peabody Housing Trust. In early 1999 suitable land was found in the London Borough of Sutton, and both the BedZED project and Bill Dunster architects (BDa) were born.

Since 1999 the practice has completed a number of award winning building projects.

Prior to setting up BDa, Bill was an Associate at Michael Hopkins and Partners, and was with the practice for 15 years, specialising in low energy and sustainable development.



New parliamentary building, London

July 95 - July 1999

Nottingham University New Jubilee Campus was the final project Bill completed as an associate for MHP. He took the scheme from the initial competition bid through to completion. Opened in December 1999 by HM the Queen, the campus has since been awarded the Stirling Prize, Sustainability Award 2001.

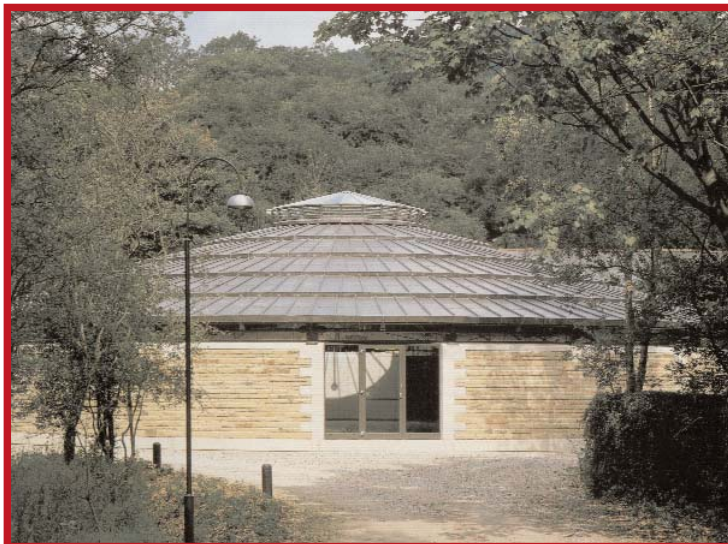
Aug 92 - July 95

Before Nottingham, Bill developed the environmental strategy and detailed façade design for Portcullis House. This work followed 4 years of research in the European Union funded Joule Research Project, collaborating with the leading environmental consultants in Europe, including Arup, CSTB Nantes, Christian Bartenbach and Conphoebus.

July 90 - Aug 93

Bracken House redevelopment, City of London.
Contract value £85 million. Senior architect

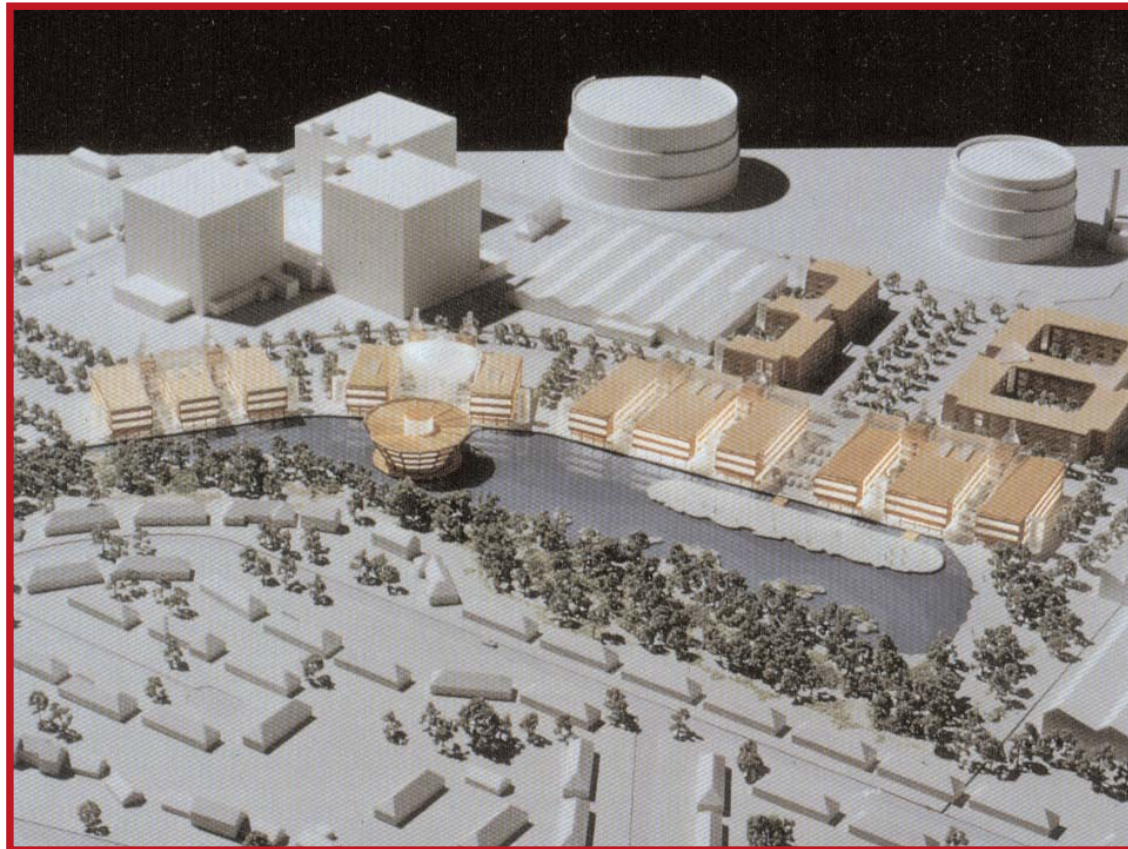
Bill has also taught at the Architectural Association and Kingston University. He speaks regularly within the UK, and has been a member on a number of overseas British Council delegations to China and Japan.



David Mellor factory at Hathersage Derbyshire

title **Nottingham Jubilee Campus**
client **Nottingham University**
value **NA**
type **Education**
dates **Completed September 1999**

Bill Dunster was responsible for designing this competition-winning scheme while at Michael Hopkins and Partners. He saw the project through all phases of design and construction.



Above: View of the completed campus buildings (Awarded the **RIBA sustainability prize 2002**) & A model of entire campus development

Awards List

Stirling Prize 2003

Shortlisted Main Prize & Winner of Sustainability Award

RIBA London Awards 2003

Winner Special Awards - Sustainability

Housing Design Awards 2003

Winner - Best Project & Sustainability Award

EU prize for contemporary architecture 2003

Nominee - Fundacio Mies van der Rohe Award

Evening Standard Lifestyle Award 2002

Winner

Energy Globe Award 2002

Winner

Eurosolar Award 2002

Winner

The World Habitat Awards 2001

Finalist

Other Citations

Prime Minister's Better Public Building Award

The Conference Building, Earth Centre,
Finalist in 2002

Design Sense Award

Hope House shortlisted 1999 by the Design Museum

RIBA Downland Award 1996

Hope House shortlisted

British Council Delegations

⌘ China, Beijing

⌘ China, Shanghai

⌘ Los Angeles

⌘ Japan

Organisational Structure



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