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Welcome

Engineers working in the built environment are striving to help reduce carbon emissions through energy efficiency and systems design. Adaptations to buildings and cities will be needed to respond to the inevitable impact of climate change and accommodate rapidly growing urban populations. CIBSE is establishing thought leadership in this area and beginning to work towards collaboration between all professions involved in the built environment and the cities that grow from it.

With the human carbon account already half gone, time is pressing to hugely reduce our carbon footprint. To do so will require significant efforts to achieve the national carbon reduction targets. We are entering a period of challenge where more skilled resources will be needed. CIBSE is embracing a new research initiative on diversity and inclusivity in the building services arena, linking with sustainability. Innovation and skilled engineering will be essential in years to come.

The 2014 CIBSE Building Performance Awards showcase the achievements within our industry of those people creating innovative strategies for refurbishment and energy efficient operation of existing buildings, those designing new buildings that operate more effectively, and those developing the products and systems that support them.

Building performance, environment and engineering are at the heart of everything that CIBSE does. That's why this year's winners and nominees should be celebrated for their outstanding accomplishments, and for showing how our industry can reach out to achieve beyond best practice.

George Adams
CIBSE President



THANK YOU TO THE 2014 AWARDS JUDGES



John Aston MSL,
President-Elect, Society
of Light and Lighting



Sarah Cary,
sustainable developments
executive, British Land



Paddy Conaghan
MCIBSE,
consultant, Hoare Lea



Hywel Davies
technical director and
chair of judges, CIBSE



Susie Diamond,
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LLP



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URS Global



Michelle Perry,
key account manager,
Troxy



Will Pitt MCIBSE,
principal mech eng
manager, NG Bailey



David White MCIBSE,
managing director,
Building Services Design

CALL FOR 2015 JUDGES

The panel consists of individuals whose combined skills and knowledge span all the elements that impact upon building performance. If you are interested in getting involved in next year's awards, then we'd like to hear from you. Visit www.cibseawards.org/judging



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CALL FOR 2015 ENTRIES

The CIBSE Building Performance Awards are free to enter. Entries are submitted online and, to make the process as simple as possible, there are template entry forms for each category.

Call for entries to the 2015 competition will start on 2 June 2014 and close on 11 September 2014.

Sign up to our awards newsletter at www.cibseawards.org for the latest news.

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The Future

Our business is about our people, our culture and our strategy. Operational excellence and innovation remains at the centre of everything we do.

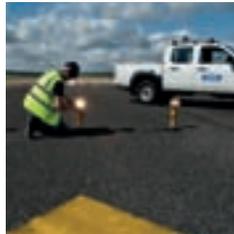
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- Examination of new business models
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Charting the

With the recovery in construction gathering pace, a detailed first-time survey of M&E consultants and contractors will help to reveal the sector's stellar performers, writes **Ewen Rose**

Commercial building activity reached its highest level since 2007 in December, according to the Markit survey for the Chartered Institute of Purchasing & Supply purchasing managers index (PMI). It also revealed that numbers employed in the industry have been rising steadily for the previous seven months.

'The improving UK economic outlook is helping boost private sector spending patterns, meaning that the construction recovery has started to broaden out from housing demand and infrastructure projects to include strong growth in commercial building work,' says Tim Moore, senior economist at Markit.

But how deep-rooted is this recovery? And what does it mean for the building services engineering sector in particular?

A detailed market research exercise launched by *CIBSE Journal* hopes to answer these questions as well as provide the most in-depth profile of the sector so far.

Market recovery

The largest consultancies and M&E contractors are being asked to provide

details of their turnover; profit; staff numbers and workload in the first detailed data-gathering exercise of its kind aimed at the building services sector. [The table shows the firms with the largest number of CIBSE members]. Economic forecaster and construction research specialist Hewes and Associates aims to compile an M&E league table from the information, which will give clues as to how the industry is responding to market recovery.

'This sector is poorly served in terms of data and surveys,' says Hewes and Associates founder Martin Hewes. 'As a result it has suffered from a relatively low profile and some confusion about what it actually has to offer.'

Hewes says clients are often unclear about what M&E firms can do and find it hard to put an accurate value on the activities of engineers in this arena.

Firms will receive a questionnaire asking them to disclose information about their turnover; operating profit; employees – full-time and part-time as well as chartered and non-chartered.

The survey will also drill down into the work carried out by engineering staff

and establish how many apprentices and graduates are being employed, along with the nature of the work they carry out. It will also look at overseas staff and prospects for international contracts.

Firms who feature in the rankings will benefit from increased profile and positive PR – particularly as this data will be supplied to clients. Hewes says his previous experience shows firms are enthusiastic about being featured because it increases their visibility and helps them to compare their performance against their peers.

'We realise some companies will be nervous about revealing too much detail about their operations, but there is a wider benefit here – both to individual firms and the sector as a whole.'

The data will help with analysis of how companies have dealt with the recession and their strategies for rebuilding growth. Payment issues, including rising and falling fees, and developments like zero hour contracts will come under the microscope.

The bigger picture

The survey will drill into the data in a number of ways so businesses will be ranked by turnover and profit, but also by other measures such as staff numbers and sales per staff.

'It is important to carry out this exercise now because, although there is definitely growth in the market, there are serious questions about how sustainable it is,' says

stars

Hewes. 'We still have a significant public sector deficit and many firms depend heavily on that area.'

The economy grew by £50 bn in 2013, but Hewes believes we are not out of the woods yet because government 'is still spending £110 bn a year more than it collects'.

'If they try to do something about the deficit this year, it is bound to have an effect on the relaunch of public sector spending,' added Hewes.

The housing market is powering ahead, but that could also judder to a halt if the Bank of England decides to raise interest rates. Hewes is also concerned that we are storing up future debt problems.

'We are close to having a generation that knows nothing other than near zero interest rates, but that can't go on for ever,' he says. 'Last year, house prices outpaced wages by a factor of eight to one. The old concept that wages would continue to rise, so allowing people to pay down their debts, seems to have gone forever – we are entering uncharted territory.'

There is also pressure on wage levels in many parts of the construction sector – particularly in private housing and repair and maintenance – as demand rises and skill shortages become apparent. Hewes expects to see more evidence of this in the survey of M&E firms.

The market research carried out by Hewes should help to build a better picture of the skills needed to deliver high

performance buildings and support end users' efforts to reduce running costs in the face of rising energy prices. It is seen by CIBSE as an opportunity to give clients a clear definition of what the sector has to offer and to highlight the growing importance of buildings performing more in line with design expectations.

Buildings account for about half of all the energy used in the UK and developers already recognise the role played by building services specialists in helping them reduce the energy burden on new and existing facilities. CIBSE believes the research is an opportunity to showcase the value of what the sector has to offer. This is why the exercise is being launched alongside the CIBSE Building Performance Awards, where a record number of energy and carbon saving projects were recognised this year.

'It will become increasingly important to raise the profile of the profession because building services will have to compete hard to attract the best and brightest potential recruits,' says Hewes.

The race is on for M&E companies to demonstrate why they offer a worthwhile and rewarding career. Engineering as a whole will require hundreds of thousands of new recruits between now and 2020 to help the UK deliver its ambitions for new infrastructure and the *CIBSE Journal* survey will play a role in ensuring this sector gets its fair share. 

The survey is an opportunity to showcase the value of what the sector has to offer

Top 10 organisations ranked by number of CIBSE members

1	Arup
2	Hoare Lea
3	WSP
4	Atkins
5	AECOM
6	Buro Happold
7	Mott MacDonald
8	Cundall
9	Balfour Beatty
10	Parsons Brinkerhoff

See March online edition of *CIBSE Journal* for top 50



Congratulations to the winners for cleaning up.

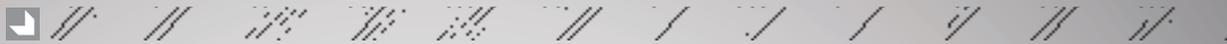
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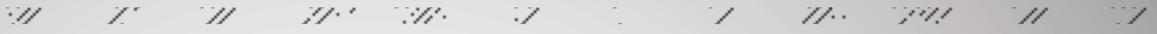
commercial

Carbon Champion of the Year



MARKS & SPENCER, CHESHIRE OAKS, ELLESMERE PORT

Sustainable Design Solutions/Marks & Spencer



Cheshire Oaks exceeded its predicted consumption figures with carbon and energy reductions of 44% and 43% respectively

Marks & Spencer's commitment to improving building performance and the reduction of energy consumption, means it is this year's worthy overall winner. Its Cheshire Oaks store, which won New Build Project of the Year (value over £10m) – see page 25 – is a game-changing development, which demonstrates the advances that can be made in the energy performance of retail



“ Marks & Spencer's Cheshire Oaks store demonstrates what the private sector can achieve on a voluntary basis
The judging panel ”



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Training for Building Performance Award



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BRE Group Training



Demand has far exceeded the BRE's initial expectations – BREEAM AP is having a much wider impact on the built environment than initially anticipated



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The BRE's BREEAM Accredited Professional learning programme emerges victorious, with the Group developing a scheme that strikes a balance between the needs of the industry with the desire to provide a testing challenge that is more adaptable to occupiers' changing requirements

BREEAM Accredited Professional (AP) educates designers to deliver better sustainable buildings through a greater understanding of BREEAM. It looks at BREEAM's role in the design process and identifies pitfalls that can result in poor outcomes. A qualified BREEAM AP will guide the design team and client through the design and assessment of sustainability, helping to maximise performance, minimise costs and lower barriers to sustainability.

The course is a blended learning approach that starts with an online technical course, fully immersing the delegate into BREEAM's technical and operational requirements. This is delivered through a mixture of static PDF

documents and animated, voiced-over presentations. In the classroom, the course switches to a workshop approach with live presentations and workbook/group exercises.

One of the main challenges was designing a course that was accessible to designers and delivered information on their level. During development of the course, BRE held a number of focused workshops comprising design professionals to tailor the qualification to the industry while still providing a challenge. BREEAM ratings have become a recognised feature of the new build and refurbishment markets, helping to establish sustainability as a key consideration in the marketplace. ↗

“BREEAM has achieved international recognition
The judging panel”

FINALISTS

Better Building, Putting the Fabric First – Ecological Building Systems

Crack the Carbon – GEA Consulting/ FreshWater Communications

Green Stripes – Green Gauge Trust

Harrods Multi Generation Apprenticeship Scheme – Harrods

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Client Energy Management Award



BRITISH LAND (PORTFOLIO)

British Land



British Land has cut landlord-influenced energy by 33% since 2009 (improving on last year's 27% fall)



PROJECT TEAM

Broadgate Estates/Colliers International/
Montagu Evans/ Munroe K/ Savills/
Smith Young/Workman
Property owner: British Land

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British Land takes the trophy for Client Energy Management once again, making it a memorable night for the property giant

Since winning the Client Energy Management Award last year, British Land has achieved even greater reductions across its portfolio – no mean feat as savings become progressively harder to realise year on year. It has cut landlord-influenced energy by 33% since 2009 (improving on the 27% reduction last year). This has saved occupiers £5.2 m and cut carbon emissions by 39,600 tonnes. British Land has achieved much greater landlord reductions than its UK peers, and has invested £2.2 m to drive further reductions.

Implementing good energy and building management practices is vital if the UK is to dramatically improve energy efficiency and cut carbon emissions in existing buildings. British Land estimates that the following measures have generated most of its reductions across the office portfolio:

- 15% from aligning central plant run times with occupiers' operational requirements

- 10% by eliminating heating and cooling conflicts, and increasing intake of external ambient air
 - 5% by adjusting set points
 - 5% from installing light sensors or replacing lighting in the common parts.
- Having achieved a significant change in culture with its building engineers and managing agents, British Land is now working closely with its building management system (BMS) contractors to drive more functionality from the BMS.

Its work with the Better Buildings Partnership and other partners has contributed to the development of a prototype Landlord Energy Rating tool that can accurately compare landlord energy efficiency between commercial buildings. British Land has also uploaded data for 13 major buildings to CarbonBuzz so that they can benchmark their energy use and allow others to do the same.

In 2013, occupiers rated satisfaction with British Land as 7.8 out of 10, well ahead of the industry average of 5.1.

“This submission is not just the best of what we have, but it illustrates a huge improvement on last year's performance”
*Hywel Davies,
chair of the judges*

FINALISTS
Aston University (Birmingham Campus) – Aston University
M&G Real Estate Shopping Centres (Various UK) – M&G Real Estate
UK Power Networks (Bankside Substation, London) – Arup

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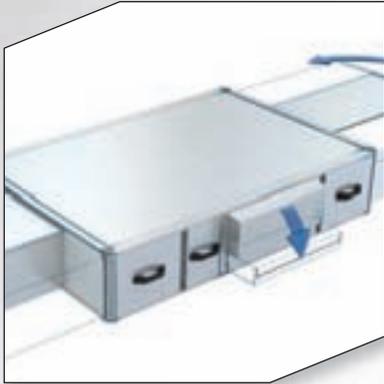
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Energy Saving Product of the Year



XBOXER XBC HEAT RECOVERY RANGE

Nuairé



Nuairé's XBOXER heat recovery products are quieter, more efficient and smaller than previous ranges



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Nuairé takes the trophy for its XBOXER heat recovery product range. Its small footprint, high efficiency and low noise has proved a big hit with customers

Nuairé's XBOXER range of heat recovery products was designed to be quieter, more efficient, smaller, have more control options and be easier to install.

The first XBOXER in the range to be developed was the XB55, which was specifically designed for school classroom applications. This product was independently tested by BSRIA at site and, to date, the XB55 is the only commercial heat recovery product that has been independently tested and certified by BSRIA to meet the strict noise requirements of BB93 for schools. The unit was also tested to meet the ventilation rates of BB101. Now the range has been extended to suit a variety of applications.

XBOXER's design allows for flexibility in ductwork connections and a patent application has been filed for its segmented,

100% bypass facility and actuator, which operates under automatic control. The range incorporates an aluminium counterflow plate heat exchanger matrix with a thermal efficiency of up to 96%. The asymmetric, high mass, double skinned wall construction with integral acoustic barrier mat ensures low breakout noise and is also the subject of a patent application.

The new XBC range is now up to 90% efficient, compared with 65% efficiency on the previous XB 2-5 range. Nuairé has applied for the Energy Product Listing (ETL).

The product has been a big success with customers. It is Nuairé's fastest-selling heat recovery product and, in the first five months after launch, sales were up more than 500% compared with previous heat recovery ranges. 

It's an all round sustainable product and could make a real impact on energy consumption
*Hywel Davies,
chair of judges*

FINALISTS

Armstrong OPTI-VISOR – Armstrong Fluid Technology

Ceiling Rose Motion Sensor – Adaptarose

Dow Corning Architectural Insulation Module – Dow Corning

EcoMESH Adiabatic System – EcoMESH Adiabatic Systems

Energy Consumption Optimizer – Energy Intelligence Worldwide

External thermal roller blinds – AMA/ Enviroblinds

GTEC Weather Defence – Siniat

NUDURA Insulated Concrete Forms – NUDURA

Supafil CarbonPlus – Knauf Insulation



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HIGHLY COMMENDED

Finchley Memorial Hospital, London – North London Estate Partnerships

A collaboration of private and public sector groups, including Galliford Try, Bilfinger Berger, Community Health Partnerships and gbpartnerships, helped to develop a landscaped health campus that offers outdoor space for the whole community.



OTHER FINALISTS

Energy Management Team (Debut, the Defence Infrastructure Organisation and supply chain specialists) — Debut Services (South West)

HVAC roof infrastructure, Harrods, Knightsbridge, London – Harrods

Collaborative working techniques were given a stern test with Project Orbit – EE's plan to reduce its corporate property portfolio by 20%. Norland was up to the challenge, rotating and relocating more than 5,500 staff over 30 weeks

This is the second straight victory for the Norland and EE collaboration. In 2013 it won Contractor of the Year for an EE project in Darlington where HVAC systems were replaced in two offices.

Norland maintains building services at EE's UK corporate buildings. Project Orbit was implemented to reduce EE's corporate property portfolio by 20% and realise a £10.2 m saving in operational budgets (energy, building running and servicing costs), and to change working practices.

Norland devised a detailed programme and delivery handover process across 14 phases, rotating and relocating more than 5,500 of its staff over 30 weeks. The integrated programme made enough space for Norland to carry out M&E installation and build works so that – when the teams moved – their rooms and

labs were available from day one.

A blog was used to assist with staff communication, and the delivery team was engaged through an online Q&A format. This was coupled with face-to-face briefings with move champions from each team. Soft landings principles were employed, which included procedures and checklists that acted as signposts for design teams to help end-users get to grips with their often unfamiliar and complex new buildings.

In addition to the operational savings, Norland is in the process of completing a 12-month energy consumption comparison across the whole estate. Three months into post-handover monitoring, early results show an obvious reduction in carbon and energy from closing the five sites, plus an impact made by changing the lighting, controls and HVAC systems. ↗

6 Norland delivered significant savings to a challenging programme
The judging panel

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PROJECT TEAM

Building services engineer: Norland
Building occupier: EE (T-Mobile and Orange)
Design/building control: Norland
CDM: Norland
Air conditioning: Daikin
Lighting: Thorn Lighting
Contractor: Norland



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Building Operation Award



EXCHANGE HOUSE, BROADGATE, CITY OF LONDON

British Land/Broadgate Estates



Improvements at Exchange House have cut carbon emissions by 8,500 tonnes and benefited occupiers by delivering energy cost savings of more than £1 m in the last four years



PROJECT TEAM

Building services engineer: Broadgate Estates

Building owners: British Land/Blackstone

Building occupiers: F&C Asset Management/Herbert Smith Freehills/Société Générale

Mechanical and electrical consultant: EP&T Global

British Land continues its winning ways at the Building Performance Awards with victory at Exchange House where, together with the occupiers and manager Broadgate Estates, it has made the building more energy efficient and easier to operate

British Land has cut landlord-influenced energy at Exchange House by 31% since 2009 (with the majority of the savings realised in 2012/13). It has also helped occupiers achieve 23% reductions in their areas. Total reductions have cut carbon emissions by 8,500 tonnes and delivered energy cost savings of more than £1 m in the last four years.

The investment in an energy monitoring system at Exchange House identified opportunities for the building management team to optimise consumption, with successful examples including: reducing how long the air conditioning system operates when the override option is used; addressing an increase in the air conditioning base load, due to a faulty power pack; optimising the heating schedule and adjusting lighting timings and patterns for external areas.

British Land also engaged with

occupiers to introduce measures to align plant run times with operational needs, including the introduction of out-of-hours energy billing to incentivise businesses to explore more efficient alternatives to operating out-of-hours; agreeing core hours for the building and removal of override switches on the office floors for heating and cooling out-of-hours.

Broadgate Estates and British Land lead a well-established green building group with all occupiers at Exchange House and provide them with six-monthly building environmental statements. This allows capital investment initiatives to be agreed to help occupiers improve energy efficiency and cut costs.

Clearly, the landlord is doing the right thing: independent surveys consistently show that occupier satisfaction with British Land and Broadgate Estate exceeds the industry average.

“ I am impressed with the project team’s conscious effort to save energy and its ability to deliver significant savings year on year
Hywel Davies,
chair of the judges

FINALISTS

Harrods, Knightsbridge, London – Harrods

MoD, Abbey Wood, Bristol – Debut Services (South West)

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Judges' Special Engineering Award

VELODROME LONDON 2012 OLYMPICS ChapmanBDSP

The judges thought this entry was a 'one-of-a-kind' project that delivered excellent building performance which, in turn, contributed to outstanding and world-beating performance on the track

Inspired by the creativity and engineering rigour that goes into the design and manufacture of a modern bicycle, the London 2012 Velodrome combines architectural ingenuity and engineering efficiency.

At its heart is the 250 metre-long cycling track, which drives not only the architectural form but also the environmental strategies for the building. The need for speed on the track means that cyclists like the air to be warm, so it's less dense, allowing them to go faster. However, spectators require a different thermal environment for their comfort.

Even after the 2012 Games, the Velodrome had to be able to cope with the strict ambient and lighting requirements of televised events (2,000 lux) as well as normal day-to-day amateur training sessions (300 lux). An inventive – yet simple – solution was devised to address these contrasting needs while ensuring the highest degree of energy efficiency and conservation, and supporting the first-ever High Definition broadcast Olympics.

With a compact volume, high levels of thermal insulation, abundant daylight coupled with efficient artificial lighting, integrated natural ventilation and efficient mechanical ventilation and heating, the Velodrome achieves more than a 30%

reduction in carbon emissions – over and above Building Regulations requirements, even before any contribution from the Olympic Park district energy network is taken into account.

Water use is also minimised, with a predicted 75% reduction in potable water consumption. This is achieved by efficient fittings and a rainwater harvesting system that provides 44% of the predicted annual water demand. The Velodrome achieved BREEAM Excellent rating under the bespoke BREEAM assessment developed by BRE for the Olympic venues.

The Velodrome is a prime example of integrated design, where architecture and engineering come together to create a building that surpasses sustainability targets, producing stunning architecture ahead of programme and on budget, and delivering world-beating performance both in its construction and on the track. 

“The Velodrome is a building that shows the world-leading attributes of British engineering and British cycling
Hywel Davies,
chair of judges”



Extensive computational simulation was used to refine the area requirements for air inlets and outlets to achieve the required level of ventilation



PROJECT TEAM

Building services engineer:
ChapmanBDSP (formerly BDSP)
Building owner/occupier: Lee Valley
Regional Park Authority
Project manager: CLM Delivery Partner
Architect: Hopkins Architects
Contractor: ISG

New Build Project of the Year (value up to £10m)

MONTGOMERY PRIMARY SCHOOL, EXETER

HamsonJPA



Pupils at Montgomery Primary School now have light, airy classrooms and the new building is said to be the first 'true' zero carbon in-use school in Europe

Exeter's Montgomery Primary School is top of the class, with lessons to be learnt from its Passivhaus principles and its strategy of zero carbon in use

Montgomery Primary School in Exeter is one of the first Passivhaus schools in the UK and is said to be the first 'true' zero carbon in-use school in Europe. Using Passivhaus principles (and heat from the pupils) the building is constructed to minimise heat losses and is built using precast concrete panels with high thermal mass. The design is expected to pass the requirements of BB 101 for the current climate, but also be able to deal with future temperature change. Key design features are:

- Orientation of the building to maximise on-site photovoltaics generation
- Use of materials from sustainable sources

- Minimisation of construction waste by use of off-site construction techniques
- Design for low maintenance – whole life costings undertaken
- Providing a suitable thermal environment for the lifetime of the building.

To ensure the commissioning and handover process ran smoothly, the Soft Landings approach was adopted, in addition to an extended commissioning period being specified in the contract. To date, the extensive building modelling undertaken has almost perfectly predicted the energy and comfort requirements of the building in use. Data has been submitted to the CarbonBuzz website. 



PROJECT TEAM

Building services engineer: HamsonJPA
Building owner: Devon County Council
Building occupier: Montgomery Primary School
Project manager: W T Hills, Exeter
Quantity surveyor: NPS Group Exeter
Architect: NPS Group Exeter
Mechanical and electrical engineer: HamsonJPA
Contractor: Bam Construction

With Montgomery Primary School, the whole emphasis was on a Passivhaus approach, with proper attention to ventilation
Paddy Conaghan, judge

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FINALISTS

CarbonLight Homes IV, Kettering – VELUX Company

Preston Manor Lower School, Brent – HLM Architects

Si Yuan Centre, University of Nottingham, Nottingham – URS

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New Build Project of the Year (value over £10m)

MARKS & SPENCER, CHESHIRE OAKS, ELLESMERE PORT Sustainable Design Solutions/Marks & Spencer



The Cheshire Oaks project achieved BREEM Excellent with a score of 74.68%



PROJECT TEAM

Building services engineer: Sustainable Design Solutions
Building owner: Marks & Spencer
Building occupier: Marks & Spencer
Quantity surveyor: Gleeds
Architect: Aukett Fitzroy Robinson
Mechanical and electrical engineer: Sustainable Design Solutions
Contractor: Simons Group

M&S smashes its own carbon and energy targets at Cheshire Oaks, setting a very high benchmark for future retail schemes

Cheshire Oaks is the latest of Marks & Spencer's Sustainable Learning Stores, designed and constructed to be their most sustainable, energy efficient and environmentally friendly store to date.

The project team was committed to the development of a truly sustainable store. It focused on optimising the site and building form, and the materials to be used – paying special attention to both operational and embodied carbon. It aimed to meet or exceed its Plan 'A' commitments on areas such as energy, water, biodiversity, transport, waste management, procurement, resource use and stakeholder engagement.

It targeted reductions of 34% for predicted operational carbon and 29% for operational energy (compared to a peer premier store). The measured energy consumption (period end August 2012 to end August 2013) identified the building performing considerably better than predicted, with carbon and energy reductions of 44% and 43% respectively.

HVAC consumption is some 14% of

total electrical consumption – very low for a retail store. This is due to a highly efficient envelope; optimisation of store HVAC systems; use of highly efficient displacement ventilation; and 'free cooling' for displacement supply air, limited use of both mechanical cooling and gas heating. There is demand-led control and fan speeds are limited to 50% for substantial periods (inverter control).

The Cheshire Oaks store is part of the TSB Building Performance Evaluation (BPE) and the data will be published under the TSB BPE section of CarbonBuzz. A carbon consultant was employed to undertake a life cycle assessment over a 60-year period. This demonstrated that the development achieved an embodied carbon reduction of 24% against a notional baseline.

This learning store has built on a strong bank of knowledge and experience in sustainable building practices and will inform M&S strategies and specifications for both the existing estate and new development schemes. 

“The commercial relevance of what they've done and the impact in the property sector is hugely impressive and significant
The judging panel

FINALISTS

Giant's Causeway Visitor Centre, Co Antrim, Northern Ireland – Bennett Robertson Design

Houghton Primary Care Centre, Tyne and Wear – Breathing Buildings/Mott MacDonald

Sainsbury's, Hardwick Place, King's Lynn – Sainsbury's Supermarkets

South Place Hotel, London – Hoare Lea

Velodrome London 2012 Olympics – ChapmanBDSP (awarded Judges' Special Engineering Award, see page 22)



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Forward Through Innovation

International Project of the Year

GARDENS BY THE BAY, MARINA BAY, SINGAPORE

Atelier Ten



Atelier Ten's innovative designs have kept energy consumption as low as possible at Gardens by the Bay – an ambitious 52-hectare land reclamation project in Singapore's Marina Bay



PROJECT TEAM

Building services engineer: Atelier Ten
Building owner: National Parks Board, Singapore
Building occupier: National Parks Board, Singapore
Project manager: PM Link/Buro Four
Quantity surveyor: Davis Langdon/Seah
Architect: Grant Associates/Wilkinson Eyre
Mechanical and electrical engineer: Atelier Ten
Contractor: Who Hup (Conservatories)/Expand Construction (Supertrees)

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The visual splendour of the Gardens by the Bay in Singapore is matched by Atelier Ten's innovative design solutions to minimise energy consumption and carbon emissions, which are no worse than those of a modern Singapore office building

Gardens by the Bay comprises 52 ha of landscaped gardens on reclaimed land in Singapore's Marina Bay. It has 20,000 m² of cooled conservatories, and 18 huge structures that support vertical gardens – known as supertrees – ranging from 25 to 50 metres in height.

The conservatories and the gardens have been designed to be symbiotic, through the interaction of a number of energy and water processes. Atelier Ten developed innovative strategies for controlling conditions within the scheme's two biomes, while minimising energy demand to exemplar levels. Materials and shading passively reduce cooling demand: the façade design is based on specifically selective glazing to control radiant transmission and surface temperatures, while retractable external shades modulate internal daylight levels.

The systems for environmental control

include the use of a displacement air supply system, which involves introducing the conditioning air at low level within the occupied zone to limit the volume of the building that requires conditioning. Displacement ventilation also allows for the supply air to enter the space at around 18°C – rather than at 12°C – resulting in significant energy savings.

Radiant cooling in pathways in the biomes absorbs and removes incident absorbed solar radiation, reducing the level of heat gain and the mean radiant temperature for occupants. A desiccant dehumidification system allows waste heat to be used as a regeneration source, and direct evaporative humidification (misting) is used to meet humidity demands in the Cloud Forest Dome. The zero carbon cooling and dehumidification system operates on horticultural waste diverted from landfill. 

“An ambitious project given a well thought through, holistic engineering solution
Susie Diamond,
judge”

FINALISTS

Aporti Palace, Milan, Italy – Studio Planning

Chater House, Central, Hong Kong – Hongkong Land

Commonwealth Bank Place, Darling Quarter, Sydney, Australia – Arup/Lend Lease

International Commerce Centre, Kowloon, Hong Kong – Kai Shing Management Services

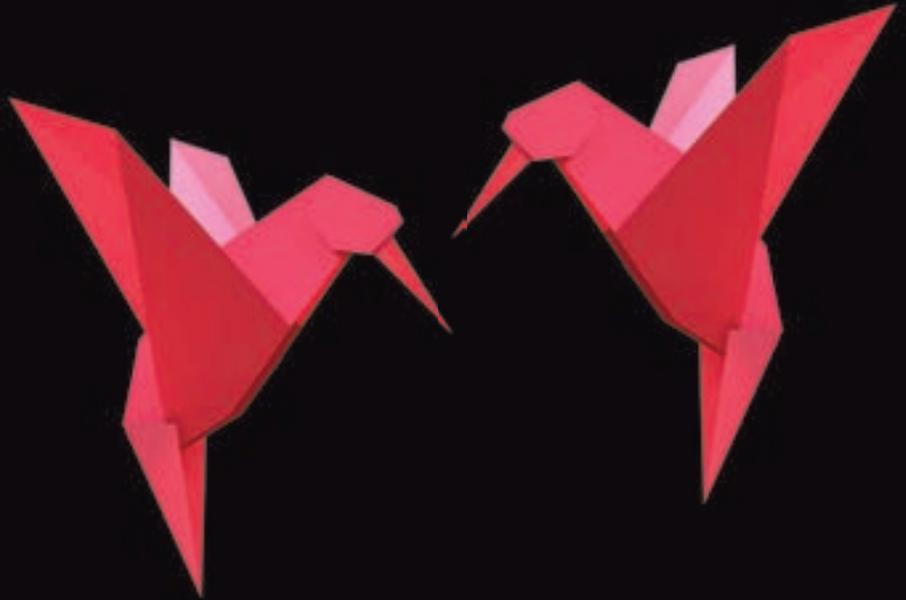
Parkview Green, Chaoyang District, Beijing, China – Ove Arup & Partners Hong Kong

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Refurbishment Project of the Year (value up to £5m)

HOLLYWOOD HOUSE, WOKING

M&G Real Estate



This 1980s office building has seen a 55% reduction in carbon, 45% reduction in energy and a 55% saving on water use, following a £3.2 m refurbishment



PROJECT TEAM

Building services engineer: MGD
Building owner: M&G Real Estate
Building occupier: Skanska
Mechanical and electrical engineer: Skanska Rashleigh Weatherfoil
Contractor: Skanska Rashleigh Weatherfoil
Investment/property company: M&G Real Estate

Hollywood House provides proof that it can pay for a landlord to invest in green technologies by using the Building Better Partnerships Green Lease format. Could this be a winning formula for future developments?

Hollywood House has been transformed from a relatively inefficient, high operating cost, 1980s office building to a green retrofitted, future-proof, efficient space. The use of the Building Better Partnerships Green Lease format provided a standard framework from which the landlord and tenant could work to agree long-term performance targets and unlock green initiatives.

A detailed life-cycle-costing model was used to assess and justify the increased capital spend of the proposed green interventions. This showed the project payback period to be nine to 10 years, and enabled the landlord to secure the building value by getting Skanska to sign a 10-year lease. For example, the Feed-in Tariff part of the photovoltaic (PV) installation will provide payback for the system within the 10-year tenancy period,

after which the tariff and electricity from the PVs will return to the landlord.

The £3.2 m refurbishment has seen a 55% reduction in carbon, 45% reduction in energy and 55% saving on water use. The Operational Rating is reduced from G177 to C54, and the Skanska-occupied floors of Hollywood House were awarded the highest LEED score in the UK at the time (96) and were BREEAM-rated Very Good.

A post-occupancy evaluation has been commissioned to learn from the project and to inform future development and a soft landings approach has been adopted – as agreed in the Green Memorandum of Understanding – to ensure project teams can remain involved after practical completion to identify energy wastage and help the occupants gain full control of the building environmental systems. 

“ This project shows what can be achieved with a typical 1980s office building
The judging panel ”

FINALISTS

Hope Villa, London – Parity Projects

Scotstoun House, South Queensferry, Edinburgh – Ove Arup & Partners

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Refurbishment Project of the Year (value over £5m)

HVAC ROOF INFRASTRUCTURE, HARRODS, LONDON

Harrods



The new rooftop HVAC plant is more energy-efficient, more resilient and offers better internal conditions for shoppers and staff



PROJECT TEAM

Building services engineer: PSK Design
Building owner: Harrods
Project manager: Riley Consulting
Quantity surveyor: Riley Consulting
Structural engineer: WSP Structural
Architect: Woods Hardwick
Contractor: Merit Merrell

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London's iconic Harrods store grabs the gong for a complex 10-year refurbishment programme that has delivered improved internal conditions, energy reductions and more resilient building services

Harrods' rooftop HVAC project is a scheme that was conceived more than 10 years ago. It was developed to replace existing, ageing infrastructure while at the same time introducing extra capacity to support future expansion plans. The ethos was to strive towards reducing energy consumption, improve comfort levels within the store, and to enhance the resilience of the system.

During the work, retail space grew from 925,227 ft² to 1,381,691 ft² while the building's annual electricity consumption has fallen from 49,000 MWh to 41,500 MWh per annum during the same period. The cumulative effect is a reduction of more than 4,000 tonnes of CO₂ each year.

The scheme has demonstrated strong collaborative working between the project team in the delivery of a complex refurbishment spread over a 10-year period. The ability to establish a strong design brief early in the process, maintain

the principles through design and construction phases, and to deliver the project with no dilution of the original vision, is very rare.

The scheme was completed without affecting the store's operation, despite the complete replacement of all air handling plant and chillers during the some of the coldest, wettest and warmest periods experienced in recent times.

The difficulties of working within a Grade II listed building, which is also an icon for London and tourists, was not used at any time as an excuse to avoid striving for the best technical solutions.

While this created the hardest challenge, the team's determination to work with the existing building has paid big dividends in the overall success of the project, which can be measured in real terms with reduced energy consumption and improved internal environment. 

“They provided comprehensive energy saving data from 2006 to 2013, and scored highly in terms of innovation
Will Pitt, judge”

FINALISTS

199 Bishopsgate, London – ChapmanBDSP

The Brassworks, London – Belsize Architects

Wiltshire County Hall, Trowbridge – WSP UK

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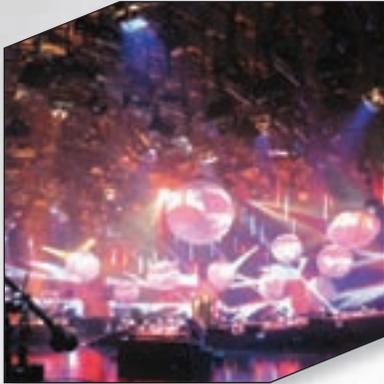
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Client of the Year



BBC

Nominated by Arup



Arup's BBC study revealed the potential to save between 30% and 50% of production energy lighting costs by using more efficient light sources and improving energy management



The BBC hits the headlines as it paves the way for reducing energy consumption in the television broadcasting industry, with a landmark study into the feasibility of low energy lighting use in TV studios

As part of its new sustainability campaign 'The Difference', the BBC commissioned Arup to study the feasibility of low energy lighting use in TV studios. This was the first time a TV broadcaster had recognised the importance of conducting a detailed investigation into sustainable lighting technologies.

Arup's study revealed the potential to save between 30% and 50% of production energy lighting costs by using more efficient light sources and improving energy management. The overall potential of annual carbon savings was estimated as just over 8,000tCO₂eq (tonnes of CO₂ equivalent), a figure reviewed and approved by The Carbon Trust, which funded part of the study as a result.

To inform and persuade production staff in the television broadcasting

industry to adopt low energy lighting solutions, Arup produced a 'one stop shop' low energy lighting guide, which was presented at a workshop and is available online from the BBC website. The guide takes into account the creative, technological and operational aspects of TV production, and reflects how behaviour can be changed.

Following the project, several TV productions have adopted the low energy lighting solutions, resulting in energy savings of up to 40%.

The BBC is recognised as an organisation at the pinnacle of the television broadcasting industry and, as a consequence, is highly influential. This ground-breaking project has allowed the BBC to pave the way for reducing energy consumption in the industry. 

 I like the idea that the client is constantly looking at its portfolio, learning lessons, and getting sharper

*Paddy Conaghan,
judge*

FINALISTS

Harrods

Sainsbury's Supermarkets

Tesco Stores

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Building Services Consultancy of the Year (up to 100 employees)



BEVERLEY CLIFTON MORRIS (BCM)



BCM places strong emphasis on delivering strategic advice to clients, appraising different options in terms of carbon emissions, running costs and capital costs



BCM takes the award for its commitment to training and development of staff, investment in BIM processes and emphasis on low carbon building solutions

BCM specialises in sustainability and low-cost, low-carbon building solutions, taking a holistic view of building design (fabric, glazing and services). This philosophy requires significant investment in the training and development of staff, with BCM's in-house scheme leading to Chartered Engineer status. Staff are encouraged to continue with their learning and development, so that the firm can grow and best serve the needs of its clients. Regular continuing professional development (CPD) sessions keep staff up-to-date and weekly staff meetings ensure there is a feedback loop.

By investing heavily, BCM has become a leading force in the use of building information modelling (BIM) processes, developing a bespoke design process to

deliver strategic advice to clients. This approach generates graphical information on carbon emissions, running costs and capital costs for each option, which can then be appraised with the client.

Among its team, BCM has a range of low carbon, energy efficiency and building performance experts, including: three CIBSE Low Carbon Consultants; one CIBSE Level 5 Low Carbon Energy Assessor; and one NHER On Construction Domestic Energy Assessor. BCM's commissioning managers are involved in soft landings processes for Manchester City Council's Building Schools for the Future Wave 4 schools, and the firm encourages clients to populate tools such as CarbonBuzz to obtain information about how buildings operate to close the performance gap. 

“The judges were impressed with the range of client services provided by BCM

*Hywel Davies,
chair of the judges*

FINALISTS

Beattie Flanagan

CBG Consultants

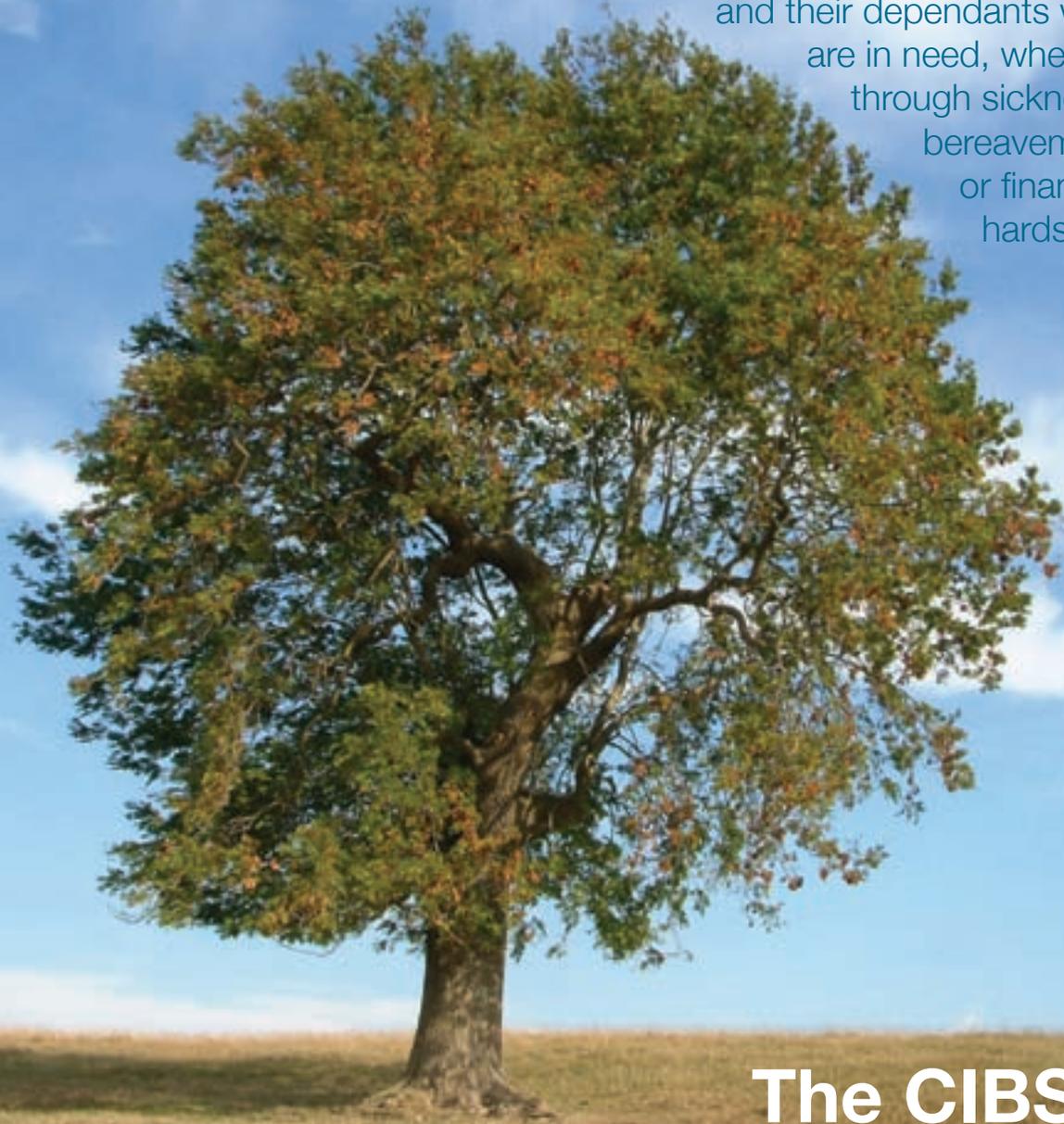
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Building Services Consultancy of the Year

(more than 100 employees)

MAX FORDHAM



Another successful year for Max Fordham saw 30 graduates recruited, growing the practice to more than 180 staff

CIBSE BUILDING PERFORMANCE AWARDS 2014
Winner

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An outstanding year for Max Fordham has seen the practice grow, receive glowing customer feedback and take a key role in implementing initiatives such as soft landings and CarbonBuzz

Max Fordham is committed to employing graduates and has recruited 30 in the last 12 months, growing the practice to more than 180 staff. The practice also won the CIBSE Employer of the Year Award in October 2013. Its policy is to nurture its progress and it is committed to training, ensuring that opportunities are provided for the personal and professional development of all employees. This includes sabbaticals for study, work or travel, including pro bono work in the developing world. Weekly opportunities for shared learning come in the shape of lunch meets and technical lectures, given internally by experienced engineers, to encourage continuous professional development in core skills.

Max Fordham engineer Tamsin Tweddell has played a fundamental role, working closely with BSRIA, in applying the soft landings methodology.

The practice also contributed to a British Council for Offices (BCO) report advising members on how to manage their energy data to benchmark performance.

It also recently developed the Energy Tracker tool, in collaboration with Feilden Clegg Bradley Studios. This evaluates building performance gaps by creating energy profiles that help to monitor and manage energy performance throughout the project design and in-use phases. The practice also developed the Energy Risk Register, which identifies the elements of design that are at risk to poor in-use performance. Max Fordham is currently implementing a business plan to conduct post-occupancy evaluation on all projects.

Research found overall satisfaction among customers to be high, with an overall score of eight out of 10 compared with the industry standard of 7.6. 

“Max Fordham impressed the judges with its emphasis on measuring and improving building performance”
Hywel Davies,
chair of judges

FINALISTS

AECOM

Arup

Grontmij

Hoare Lea

FINALISTS FOR THE CIBSE BUILDING PERFORMANCE AWARDS 2014

TRAINING FOR BUILDING PERFORMANCE AWARD

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- BREEAM Accredited Professional – BRE Group Training **WINNER**

- Better Building, Putting the Fabric First – Ecological Building Systems

- Crack the Carbon – GEA Consulting/ FreshWater Communications

- Green Stripes – Green Gauge Trust

- Harrods Multi Generation Apprenticeship Scheme – Harrods

CLIENT ENERGY MANAGEMENT AWARD

Sponsored by Lochinvar

- British Land (portfolio) – British Land **WINNER**

- Aston University (Birmingham campus) – Aston University

- M&G Real Estate shopping centres (various UK) – M&G Real Estate

- UK Power Networks (Bankside Substation, London) – Arup

ENERGY SAVING PRODUCT OF THE YEAR

Sponsored by Spirotech

- XBOXER XBC heat recovery range – Nuair **WINNER**

- Armstrong OPTI-VISOR - Armstrong Fluid Technology

- Ceiling Rose Motion Sensor – Adaptarose

- Dow Corning Architectural Insulation Module – Dow Corning

- EcoMESH Adiabatic System – EcoMESH Adiabatic Systems

- Energy Consumption Optimizer – Energy Intelligence Worldwide

- External thermal roller blinds – Alonso Marshall Associates/Enviroblinds

- GTEC Weather Defence – Siniat

- NUDURA Insulated Concrete Forms – NUDURA

- Supafil CarbonPlus – Knauf Insulation

COLLABORATIVE WORKING AWARD

Sponsored by Mitsubishi Heavy Industries Air Conditioning Europe

- Norland and EE **WINNER**

- Finchley Memorial Hospital, London – North London Estate Partnerships **HIGHLY COMMENDED**

- Energy Management Team (Debut, the Defence Infrastructure Organisation and supply chain specialists) – Debut Services (South West)

- HVAC roof infrastructure, Harrods, Knightsbridge, London – Harrods

BUILDING OPERATION AWARD

Sponsored by Gratte Brothers

- Exchange House, Broadgate, City of London – British Land/Broadgate Estates **WINNER**

- Harrods, Knightsbridge, London – Harrods

- MoD, Abbey Wood, Bristol – Debut Services (South West)

NEW BUILD PROJECT OF THE YEAR (VALUE UP TO £10 MILLION)

Sponsored by CIBSE Patrons

- Montgomery Primary School, Exeter – HamsonJPA **WINNER**

- CarbonLight Homes IV, Kettering – VELUX Company

- Preston Manor Lower School, Brent – HLM Architects

- Si Yuan Centre, University of Nottingham, Nottingham – URS

NEW BUILD PROJECT OF THE YEAR (VALUE OVER £10 MILLION)

- Marks & Spencer, Cheshire Oaks, Ellesmere Port – Sustainable Design Solutions/Marks & Spencer **WINNER**

- Giant's Causeway Visitor Centre, Co Antrim, Northern Ireland – Bennett Robertson Design

- Houghton Primary Care Centre, Tyne and Wear – Breathing Buildings/Mott MacDonald

- Sainsbury's, Hardwick Place, King's Lynn – Sainsbury's Supermarkets

- South Place Hotel, London – Hoare Lea

- Velodrome London 2012 Olympics – ChapmanBDSP

INTERNATIONAL PROJECT OF THE YEAR

Sponsored by Excool

- Gardens by the Bay, Marina Bay, Singapore – Atelier Ten **WINNER**

- Aport Palace, Milan, Italy – Studio Planning



- Chater House, Central, Hong Kong – Hongkong Land

- Commonwealth Bank Place, Darling Quarter Sydney, Australia – Arup/Lend Lease

- International Commerce Centre, Kowloon, Hong Kong – Kai Shing Management Services

- Parkview Green, Chaoyang District, Beijing, China – Ove Arup & Partners Hong Kong

REFURBISHMENT PROJECT OF THE YEAR (VALUE UP TO £5 MILLION)

Sponsored by Hitachi Air Conditioning Europe

- Hollywood House, Woking – M&G Real Estate **WINNER**

- Hope Villa, London – Parity Projects

- Scotstoun House, South Queensferry, Edinburgh – Ove Arup & Partners

REFURBISHMENT PROJECT OF THE YEAR (VALUE OVER £5 MILLION)

Sponsored by Beeby Anderson Recruitment

- HVAC roof infrastructure, Harrods, Knightsbridge, London – Harrods **WINNER**

- 199 Bishopsgate, London – ChapmanBDSP

- The Brassworks, London – Belsize Architects

- Wiltshire County Hall, Trowbridge – WSP UK

CLIENT OF THE YEAR

Sponsored by Imtech

- BBC nominated by Arup **WINNER**

- Harrods

- Sainsbury's Supermarkets

- Tesco Stores

BUILDING SERVICES CONSULTANCY OF THE YEAR (UP TO 100 EMPLOYEES)

Sponsored by Baxi Commercial

- Beverley Clifton Morris **WINNER**

- Beattie Flanagan

- CBG Consultants

BUILDING SERVICES CONSULTANCY OF THE YEAR (OVER 100 EMPLOYEES)

Sponsored by Baxi Commercial

- Max Fordham **WINNER**

- AECOM

- Arup

- Grontmij

- Hoare Lea

JUDGES' SPECIAL ENGINEERING AWARD

- Velodrome London 2012 Olympics – ChapmanBDSP **WINNER**

CARBON CHAMPION OF THE YEAR

Sponsored by Remeha Commercial

- Marks & Spencer, Cheshire Oaks, Ellesmere Port – Sustainable Design Solutions/Marks & Spencer **WINNER**

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Congratulations to all those short listed and winners of the **CIBSE Building Performance Awards 2014.**



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