CONSTRUCTING THE FUTURE

bre

Issue 28

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Comment

Establishing a green building movement in the UK

Given the US government stance on the environment, it's surprising that remarkable changes are currently taking place in the USA in the way that buildings are designed, built and managed.

A dynamic and vibrant green building movement has emerged over the past ten years. The catalyst for change was the formation in 1995 of the US Green Building Council (US-GBC). From modest beginnings the US-GBC has grown from ten Founding Members to over 6,500 member organisations.

Despite the UK being in the vanguard of green building design and construction we have nothing equivalent to the US-GBC. This weakness was identified by the 2004 Sustainable Buildings Task Group which called for the 'advisory bodies concerned with sustainable buildings to be simplified and consolidated to provide a clean direction for industry'.

BRE strongly advocates the formation of a UK Green Building Council (or coalition). It's important to note that BRE has no aspiration to own or manage the UK-GBC – we suggest that the UK-GBC should be an entirely new, not-for-profit entity having no private ownership and a constitution developed and endorsed by its founding members.

If real transformation is to be achieved on the scale required, a national coalition is essential to develop a movement that promotes and champions sustainable design, construction and management. This will deliver buildings with demonstrably lower environmental impact, whilst optimising profit for business and enhancing the UK's world-class position in sustainable building design.

If you want to gain competitive advantage by establishing your business at the leading edge of a rapidly expanding market for green building products and services the article on page 5 will be of particular interest – please also visit www.ukgbc.org to download a Prospectus and register your interest.

David Strong
Managing Director of BRE Environment

New home for Building Performance Group

BRE has acquired Building Performance Group (BPG), a London-based practice specialising in the whole life performance of large building projects such as hospitals, schools and commercial buildings.

The acquisition will bring new areas of expertise into the existing BRE whole life performance business, together with bespoke software tools to predict service life and building component costs.

'BRE and BPG have complementary strengths in whole life performance,' says Peter Bonfield, MD of BRE's Construction Division.' By joining them we are creating a strong portfolio of building performance and value services. These services have become hugely important as the industry strives to build and refurbish in a more sustainable way. We plan to grow this business.'

'This is a great way forward for the BPG team,' says Chris Watson, MD of BPG. 'The combined resources of BRE and BPG will considerably enhance the range of services we are able to offer our clients on current and future whole life performance projects.'

BPG's team of architects, building surveyors, quantity surveyors, engineers and construction professionals have moved to BRE's base in Watford.

For more information – David Richardson, 01923 664291, Email richardsondm@bre.co.uk

Tougher energy requirements for EcoHomes

A new, revised version of EcoHomes, the environmental rating scheme for homes, has just been launched. EcoHomes 2006 includes tougher energy requirements to encourage carbon dioxide reductions and bring the scheme into line with the latest Part L of the Building Regulations.

The Government recently announced that all homes with English Partnerships or Housing Corporation funding must meet the new EcoHomes 2006 'Very Good' standard, as an interim measure until a strengthened Code for Sustainable Housing comes into effect later this year.

In addition to raising energy credit thresholds to further encourage and reward CO_2 reductions, energy savings will result from the new stipulation of A+ energy labels for refrigerators, freezers and cooling systems, and from rewards for low-energy lighting systems that exceed Building Regulation requirements.

Other changes designed to cut down carbon emissions include three new credits for renewable energy systems, and a regraded NOx credit that is easier for developments using small scale renewables to achieve.

Among the revisions involving other issues are:

- a new credit for minimising flood risk
- recognition of responsible sourcing of non-timber materials (timber sourcing is already included, but has been modified to take account of increased use of modern methods or construction)
- credits for providing a Home User Guide (where construction site impacts are monitored), for signing up to the Considerate Constructors Scheme, and where the 'Secured by Design' award has been achieved.

For more information – 01923 664462, Email breeam@bre.co.uk, visit www.bre.co.uk/ecohomes

Clockwork radio inventor supports building innovation

Trevor Baylis Brands plc and BRE have joined forces to bring innovative ideas to the construction and building management Industries.

The two organisations have complementary skills in this area – Trevor Baylis Brands plc (TBB) evaluates and sources new ideas from inventors and companies, while BRE develops new construction technology.

Established by clockwork radio inventor Trevor Baylis OBE, TBB helps inventors and industry by promoting better use of the UK's inventive talents. TBB currently evaluates more than a hundred ideas from innovators a month, and will be bringing these skills and systems to support BRE in two key areas.

Firstly, BRE is promoting the interchange of ideas within the construction industry, and has set up an Intellectual Property exchange where subscribers can review new ideas and technologies. The expertise that TBB brings to evaluating the Intellectual Property inherent in new ideas, will help to ensure that good ideas can be successfully transferred into the industrial partners participating in the scheme.

Secondly, many of the innovative ideas that TBB evaluates have applications in the Construction Industry. TBB will be working in a joint venture with BRE to market and sell these.

The two organisations have already conducted extensive trials on a Direct Air Drying system that can halve the drying time of floors and walls, so minimising the waiting time and cost before new buildings can be occupied.

TBB Chairman Trevor Baylis says, 'British inventors are full of new ideas and we are looking forward to improving the effectiveness of British Industry by jointly developing those new ideas that will really make a difference.'

'The British construction industry is one of the best in the world,' says Martin Wyatt BRE's CEO, 'and we want to make sure it stays there by making the best use of the nation's talent and ideas.'

For more information – Andrew Williams, 01923 664563, Email williamsa@bre.co.uk

Part L training – energy performance calculation

Training is available for those wanting to use SBEM, the default energy performance calculation software tool that delivers the compliance information needed for Part L, and the EPBD (Energy Performance of Buildings Directive) certificate information when this is required.

With the emphasis on hands-on learning and practice, the BRE-run course will give delegates the confidence to use SBEM (Simplified Building Energy Model) to generate evidence for Part L compliance and provide a firm ground for competent persons assessment.

BRE's sister company, BRE Certification, is licensed by ODPM to award personnel certification for CO_2 emissions rate calculations for domestic and non-domestic buildings, under a Competent Person Scheme. This will enable building professionals to demonstrate to Building Control that they are suitably qualified to undertake the energy rating calculations associated with Part L.

SBEM was developed by BRE under ODPM funding and can be downloaded free of charge from www.ncm.bre.co.uk

For more information – 01923 664565 or visit www.bre.co.uk/energyrating

Sustainability Board Chairman appointed

Bill Gething has been appointed as Chairman of the BRE Certification Sustainability Board.

The Sustainability Board provides independent governance of BRE's sustainability tools, methodologies and standards including BREEAM, Environmental Profiles and the Green Guides. It represents a wide cross section of stakeholders from the construction industry including designers, developers, end users, financiers, insurers and regulators.

One of the most respected figures in sustainable architecture, Bill Gething is the RIBA President's Sustainability Advisor, Chair of the Institute's Sustainable Futures Committee and a partner of Feilden Clegg Bradley Architects LLP.

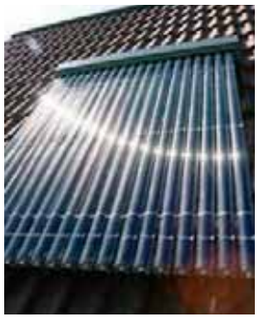
'The construction industry stands to gain much from the establishment of the Sustainability Board,' says Gething. 'It gives stakeholders from every sector of the industry the chance to influence the areas in which knowledge is developed, and to see that the tools, assessment schemes and publications BRE produces are tailored precisely to sector needs.

'There is no longer any dispute over sustainability. Everyone knows it's the big issue and that we are running out of time. We have to escalate efforts to find solutions – replace rhetoric with action.'

For more information – 01923 664510, Email brackeya@bre.co.uk

BRE Chief Executive, Martin Wyatt (front, centre) and other senior BRE managers with new BPG colleagues

EcoHomes 2006 includes new credits for renewable energy systems



Clockwork radio inventor, Trevor Baylis OBE

News from BRE Certification

Innovative security products section in Red Book

Latest government statistics show that 47% of break-ins occur through the rear of domestic properties, making the need to restrict access vital.

The Expanded Metal Company (Expamet) *Alleygator* pedestrian and vehicle gate has become the first combined gate of its kind to be certified to LPS1175: Issue 5.1: *Requirements and Testing Procedures for the LPCB Approval and Listing of Burglary Resistant Building Components, Strongpoints and Security Enclosures*. This standard is for classifying the burglary resistance to physical attack of building components, such as doors, windows, shutters, grilles, barriers, strongpoints and security enclosures. Approvals of vehicle security barriers such as bollards, barriers and road blockers can now be found in a new section of the Red Book, Part 6, section 14: Vehicle Security Barriers.

Inspiring the next generation of engineers

Each year the Royal Academy of Engineering in conjunction with the Engineering Education Scheme (England) operate a scheme to give fifth-year school pupils experience of working with industry partners on engineering projects. The scheme is designed to stimulate young people to think about careers in engineering. Following a previous success with a Gold Crest award student, BRE's electronics group were invited to take part, along with about ten other participants.

The group partnered with students from Parmiter's school in Garston to meet the need for a piece of test apparatus suitable for use in new approval scheme. The brief was to develop a multi-axis positioning system for testing biometric fingerprint readers.

Started in October 2005, the project is due to be completed this month. The pupils will present their design for assessment by a panel of Engineering Ambassadors. On successful completion of the project each pupil will receive the Engineering Education Scheme (England) and BA Crest Gold Award (BA is the British Association for the Advancement of Science).

This initiative has been supported by the BRE Trust.

Security fog generators

Business owners are often the victims of theft despite the deployment of physical security and intruder alarm systems. This is because there is a period of time between activation of the intruder alarm and the arrival of security personnel at the affected premises, during which items can be removed.

To combat this owners are installing security fog generators to provide protection pending the arrival of security personnel, by rapidly obscuring room contents in a thick shroud of fog. The sight and sound of the advancing cloud of fog has a startling effect that often causes intruders to make a rapid exit. Also, the obscuring effect of the fog hampers the location and removal of contents by those brave enough to continue the intrusion.

The reliable operation of the fog generator, coupled with the rapid generation of fog and its subsequent persistence, are key factors in the effective protection of premises. LPCB is preparing a Loss Prevention Standard for the approval of fog generators for use in security applications. The draft standard is currently with the fog generator manufacturers for comment and is expected to be completed in the summer.

For further details please contact John Holden,
Email holdenjg@bre.co.uk

Fire safety– your duty as an employer

As part of the Government's commitment to reduce death, injury and damage caused by fire, ODPM has reviewed current fire safety law and is making a number of changes through the Regulatory Reform (Fire Safety) Order 2005 (RRFSO).

The main effect of the changes will be a move towards greater emphasis on fire prevention in all non-domestic premises. Fire certificates will be abolished and will cease to have legal status. Responsibility for complying with the law will rest with the 'responsible person' – for example the employer – who could ultimately be prosecuted for failing to comply. The responsible person is required to:

- Carry out a fire risk assessment of the premises, taking into consideration all employees and all other people including contractors, visitors, etc who may be affected by a fire in the workplace. Adequate provision must be made for any disabled people with special needs who use or may be present at the premises.
- Identify the significant findings of the risk assessment and the details of anyone who might be especially at risk in case of fire.
- Record the significant findings if more than five people are employed.
- Provide and maintain such fire precautions as are necessary to safeguard those using the workplace.
- Provide information, instruction and training to employees about the fire precautions in the workplace.

The fire risk assessment will help the employer decide the nature and extent of the fire precautions that should be taken. There is a general requirement to reduce the risk to a level that is as low as reasonably practicable. The fire risk assessment is not a 'one-off' process, it needs to be kept under review and revised where necessary – for example when the fire risk or hazard may have changed due to alterations to building layout, number of employees, etc.

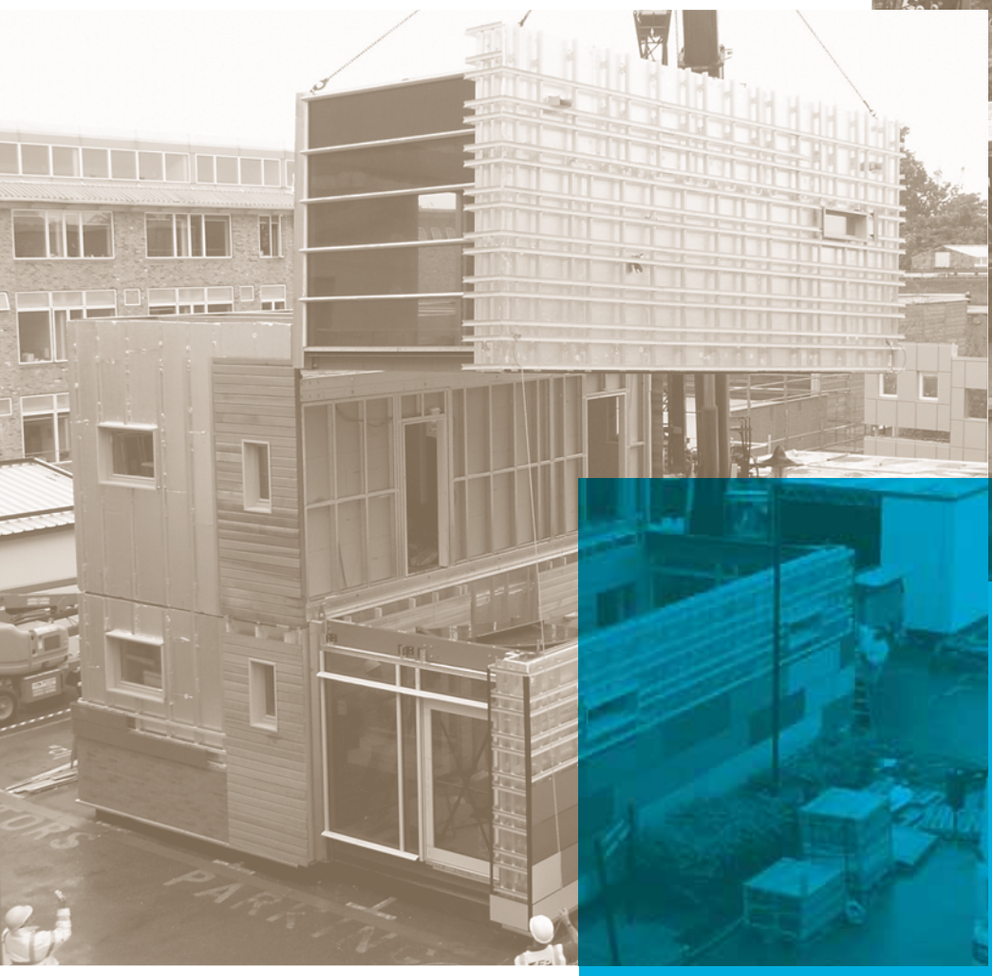
There are six other legal duties that responsible persons need to know about – the safety of their employees; consultation with employees; informing other employers in the buildings under their control; other buildings in their control; means of contacting emergency services, and employee co-operation.

A series of guides are being produced to assist in the preparation and carrying out of fire risk assessments. The guides cover the following categories of buildings and work places:

- Offices and Shops
- Premises providing Sleeping Accommodation
- Residential Care
- Small and Medium Places of Assembly
- Large Places of Assembly
- Factories and Warehouses
- Theatres and Cinemas
- Educational Premises
- Healthcare Premises
- Transport Premises and Facilities
- Open Air Events

See back cover for information on fire risk assessment training.

For more information – 01923 664883,
Email fra@bre.co.uk,
visit www.bre.co.uk/firerisk



LAUNCH OF INNOVATIVE HOUSING STANDARD

Manufacturers of innovative systems, elements and components for constructing residential buildings can now sign up to a new certification standard – LPS 2020. The arrival of LPS 2020 should spur the growth of a market previously hampered by the lack of a widely recognised formal certification standard.

'The new standard will increase the confidence of insurers, mortgage lenders and regulators in innovative systems,' says Peter Bonfield of BRE. 'It will help to overcome the UK house building industry's reluctance to adopt innovative systems, and so make possible a step-change in delivery in the UK's house building sector.'

The LPS 2020 standard has been developed by BRE Certification, with support from the Association of British Insurers (ABI) and the Council of Mortgage Lenders (CML), to assess innovative systems that have yet to gain a performance track record in the UK.

The standard covers all innovative systems regardless of type, material or form of construction (i.e. frame, panel, modular, volumetric, etc.). As well as requiring the manufacturer to demonstrate that the system meets Building Regulations, the standard addresses some additional performance characteristics including durability, resilience, ease of repair and some aspects of whole life performance and adaptability.

There is a growing demand for innovative building systems. The Housing Corporation and ODPM spend £1.1 billion a year on building affordable housing using modern methods of construction (according to Housing Corporation statistics), including £0.5 billion using off-site manufacturing approaches. Yet growth in the market has been hampered by the fact that many innovative systems are unproven, simply because they have not been used over any substantial length of time.

'The main concern for lenders on properties built using innovative construction is that we often don't know how they will perform over the full potential life of a mortgage and beyond,' says David Hylton of Nationwide Building Society. 'We need to know that they will retain their value and marketability in a similar way to conventional structures, without abnormal expenditure on maintenance and repair. This is in the interests of owners as well as lenders and LPS 2020 is a significant step forward in providing this reassurance.'

According to Allister Smith of Norwich Union Insurance, 'The insurance industry needs to understand how innovative building systems will perform against the full range of insurable risks. Many systems do not have a track record in the UK and thus can be difficult for insurers to assess. The risk profile of a property is critical, particularly in terms of resilience to hazards and cost of actual repairs following damage throughout the life-time of a building system. The risks can be significant, particularly if the innovative systems are to be volume manufactured and used in constructing large numbers of residential buildings.'

Manufacturers of innovative systems stand to benefit from LPS 2020, both in terms of existing products and those which they would like to bring to market. Currently, due to the varying needs of different approval, regulatory and warranty providers, manufacturers often have to go through several expensive and time consuming testing and assessment procedures. The LPS 2020 standard will provide manufacturers with a one-stop certification route to meet requirements agreed with insurers, lenders and regulators.

LPS 2020 has been piloted with the assistance of Spaceover Group – using their volumetric modular system which comprises pre-fabricated light gauge cold rolled steel frame components, and dry-lining and insulation materials. The modules come complete with internal fixtures and fittings, and installed onto pre-formed foundations by Spaceover approved installers.

'We are delighted to be one of the first companies to pilot the LPS 2020 standard,' says Tony Fox of Spaceover. 'But equally important for companies such as Spaceover are the innovative building systems in the pipeline. The introduction of LPS 2020 will make it much easier to bring them to market and to grow the market, which in turn will lead to increased confidence. It's a virtuous circle.'

The standard will give manufacturers a competitive edge. It will also give those manufacturers about to make major investments in factory and plant, added confidence that their innovative systems will be accepted in the market place.

Other standards are being developed to cover enhanced property and environmental protection.

For more information – Angela Richards, 01923 665136, Email richardsa@bre.co.uk

UK GREEN BUILDING COUNCIL

The USA is not often held up as an example of good environmental practice, but its Green Building Council is making remarkable progress in sustainable construction while – naturally – bringing economic benefits too. We report on an initiative to establish a Green Building Council (GBC) in the UK.

For many of us the first thought arising when challenged to design, construct and operate buildings more sustainably is, 'What's it going to cost?'. But green building practices really can make economic sense – for example, USA Green Building Council (US-GBC) member companies out-perform those in the NASDAQ, S&P 500 and Dow Jones All Share by a considerable margin.

Founded in 1995 with ten members, the US-GBC now has a membership of 6,500 companies. It promotes buildings that are not just environmentally responsible, but also economically profitable and healthy places to live and work.

The GBC is a tried and tested model.

The US-GBC is one of eight members of the World Green Building Council which includes Australia, Canada, India, Japan, Mexico and Taiwan. 'The GBC is a tried and tested model,' says BRE Chief Executive, Martin Wyatt. 'In the USA, we have seen the emergence of a body of green building practitioners and a dramatic rise in the number of buildings with low environmental impact. Thirty other countries are considering setting up national councils and becoming members of the World Green Building Council. I think that speaks for itself.'

Among those thirty countries is the UK. 'While this country has a good reputation for being in the vanguard of sustainable design and construction,' says architect Bill Gething of Fielden Clegg Bradley, and the RIBA President's Sustainability Advisor, 'good sustainability practices tend to be patchy and un-coordinated so reducing their overall impact.'

There is now the widely held view that a UK-GBC will provide the much needed focus and leadership for sustainable construction in the UK.

There is a pressing need for the property industry to speak with one voice.

According to Rob Watts of Stanhope plc, 'There is a pressing need for more clarity in the rapidly developing world of sustainable development, and for the property industry to speak with one voice. We hope that many of the disparate organisations with sustainability agendas and interests will support an independent UK Green Building Council, to represent their views both nationally and internationally.'

The Chief Executive of the British Property Federation, Liz Pearce, agrees. 'If those of us who are involved with the built environment want to make progress on sustainability, then we need a far greater degree of coherence with regard to policy, regulation, standards, behaviour – and even aspirations.

'A UK Green Building Council could be just what we are looking for', says Liz Pearce, 'but we will have to ensure that it does indeed meet these objectives, that it does not add yet another layer of organisation and bureaucracy, and that it involves the right players who can really make a difference.'

A number of 'the right players' have already pledged their support for a UK Council which will act as a champion for green buildings and optimise profit for business by developing and enhancing UK sustainable building design. They will not be starting from scratch – the UK-GBC will be able to draw on the wealth of guidance and tools that are available in the UK, including BREEAM, the international award winning environmental rating system for buildings.

Both the will and the financing to bring about real change.

'The Council will be an industry initiative set up and run by stakeholders for the general good, with both the will and the financing to bring about real change.' says Bill Gething.

The UK-GBC will form strategic alliances between members, key industry stakeholders, research and technology organisations and government bodies at the national and local level. The level of its success will depend on the active involvement of industry leaders, the establishment of co-operative arrangements with other groups of similar membership and aims (eg building owners and managers, professional bodies, NGOs and foundations), and government endorsement and assistance – but not subservience.

There are a number of pitfalls to be avoided, such as funding that is conditional on approval of activities or rights of veto, the dominance of any one industry sector, a lack of industry experience in the initial founding group and/or Board, and a launch without sufficient funding.

Self-funding by the end of the third year.

It is proposed that the UK-GBC should endeavour to obtain sufficient start-up funding to enable full-time staffing for the first two–three years, with UK-GBC being self-funding by the end of the third year. The US-GBC currently employs about 80 staff and has a turnover of $24 million per annum.

So, there is much to do if the UK-GBC is to achieve its mission: *To dramatically reduce the environmental impact of buildings by radically improving the way they are designed, built and maintained.*

But there is also an ever increasing recognition of the need for action. 'Both in the UK and internationally there is a growing enthusiasm and determination that construction should take a leading role in addressing the sustainability of its activities,' say BRE Trust Chairman Sir Neville Simms, 'be that reducing CO_2 emissions, reducing demands on natural resources or producing products that have a lasting benefit to society.

'We in the UK need to bring together that enthusiasm and energy under a single banner and provide the wherewithal to make real progress – I see the proposal to form a UK Green Building Council, to sit alongside its international counterparts, as a focal part of that important objective.'

The potential benefits for members a UK-GBC include:

- gaining competitive advantage by establishing their businesses at the leading edge of a rapidly expanding market for green building products and services
- connecting with a diverse network of professionals to gain access to the latest green building developments and information
- using the UK-GBC logo to differentiate their organisations in the market place
- playing an active role in green building opinion forming and in influencing policy making
- enhancing their organisations' environmental credentials and profile by being in the vanguard of an important new movement.

Anyone wanting to register to become a founding member of the UK-GBC can do so at www.ukgbc.org.

For more information
Tel 01923 664510, Email brackeya@bre.co.uk

World Green Building Council
The World Green Building Council, together with its members (made up of Green Building Councils from around the world), is committed to changing the property industry.

The property industry is defined as all those who produce, develop, plan, design, build, alter or maintain the built environment, and includes building materials manufacturers and suppliers as well as clients and end use occupiers.

A sustainable property industry will balance environmental, social and economic issues to ensure a viable and valuable industry for future generations.

By bringing together the Green Building Councils from around the world, the World-GBC works to share knowledge, resources and common principles to advance the development of greener buildings. It also provides other countries wishing to start their own Green Building Council with a diversity of solutions and representation to ensure a successful start-up.

Membership of the World-GBC is only open to approved (not-for-profit) Green Building Councils. It is emphasised that each individual country's Green Building Council will be formulated for that country's needs.

Key steps to establishing a GBC
A summary of advice provided by the World-GBC (www.worldgbc.org) on the steps in setting a national Green Building Council follows.

Step 1 Establish a core founding group – desirable characteristics include a broad industry network, industry credibility and diverse building sector representation.

Step 2 Create a business plan that is suitable for presentation to potential funders, board members and (if appropriate) endorsement by the World-GBC. It is likely to include a mission statement, establishment costs, ideal founding board representation, projected membership intake and income, industry activity streams, staffing needs, operational costs and a SWOT analysis.

Step 3 Establish a founding Board. Board members should provide corporate governance skills, be from diverse sectors of the industry, be industry leaders, be personally committed to the underlying ethic and intent of the Council, give broad geographic representation and provide complementary networks of industry contacts and influence.

Step 4 Seek initial funding – should be financially viable for at least 12 months. The more seed funding available at launch, the more active and visible the council can be.

Step 5 Create a legal constitution and by-laws for the Council.

Step 6 Legal incorporation with non-profit status – eligible at this step for World-GBC membership

Step 7 Establish operations, including staffing, especially the appointment of a CEO, bank accounts, an office, corporate graphics, legal counsel, financial auditors, a web presence, media advice.

Step 8 Launch and allow ordinary membership. It is important to make the most of this one-off opportunity to gain publicity and recognition. The credibility of those present at the launch will inherently establish the initial credibility of the Council.

Up to speed on Part L?

For:
Part L and EPBD guidance
SBEM training
Competent persons certification

Contact BRE:
Tel 01923 664565
Email energyrating@bre.co.uk
www.bre.co.uk/energyrating

JABHOUSE ROCKS

Sustainability is increasingly touted as a key selling point for homes built using modern methods of construction, but does the reality live up to the hype? Innovare Systems, a subsidiary of Osborne, is putting its Jabhouse design to the test, as Angela Swann **reports.**

Innovare Systems, a subsidiary of Osborne, is constructing the latest of the full-scale buildings at BRE's Innovation Park near Watford, to demonstrate and enhance the high levels of sustainability and environmental performance of its Jabhouse design.

Construction of the house started in March. Paul Ensch, Director of Innovare Systems, says, 'What we aim to do at the Innovation Park is push the Jabhouse concept to its limits. We already have a good product – we plan to improve it by stretching for the best environmental performance we can achieve.'

Sustainable first steps

The Jabhouse design is based on a flexible combination of Structural Insulated Panels (SIPS), which are used to create a structural shell that includes the internal leaf of external walls and party walls. In the demonstration house at the Innovation Park, the shell includes the first and second floors, topped by a roof system, capable of providing a room in the roof space.

Sustainable thinking starts right at the very beginning of Jabhouse construction. The designers have optimised the 'factory-to-site' phase to such an extent that only three deliveries to site are required for every four Jabhouses built.

The Jabhouse is manufactured with timbers sourced from suppliers accredited through PEFC (Programme Endorsement of Forest Certification). The floor cassettes can be provided with plywood obtaining an 'A' rated construction in accordance with the Green Guide to Specification.

The expanded polystyrene (EPS) used in the SIPs is 100% recyclable. The EPS used on the Jabhouse is produced without HCFCs/CFCs, and all OSB (orientated strand boards) used in the manufacturing process utilise virtually 100% of the tree.

Once construction has commenced, the lightweight structure of the Jabhouse means reduced foundations are required, lessening the impact of soil removal from the site and the quantity of concrete used. On site, there is virtually zero waste because the off-site manufacturing process optimises material use.

During the 12-week construction, the Innovare team are looking at how they can improve the build process still further. The building envelope can already be completed in one day. It's possible that more time can be saved later in the process.

Low energy living

The Jabhouse under development at the Innovation Park, builds on already good levels of energy efficiency. Innovare has worked with leading insulation manufacturer Vencil Resil to achieve a U-value of 0.15 W/m^{2}K, or better, for all opaque elements – for the walls this was achieved by adding a further 50mm of insulation either side of the 130mm SIPs panels.

In addition, the new house will be fitted with triple-glazed timber windows from Swedish Building Products, which achieve an average U-value of 0.8 W/m^{2}K

These further enhancements, along with an air permeability target of 1 m^3/hr/m^2 and an efficient Greenwood whole house ventilation unit with heat recovery, has resulted in a dwelling that is likely to exceed Part L1A 2006 Building Regulations requirements by some 40 per cent when completed. The predicted total carbon dioxide emissions will be just 1.5 tonnes per year.

Dr Peter Bonfield, Managing Director of BRE's Construction Division says, 'The objective of the Jabhouse demonstration is to show how innovative systems and technologies can deliver higher levels of performance compared with conventional forms of construction. BRE will conduct an independent assessment of the Jabhouse during and after construction, to verify that the house achieves what it claims. In particular, we'll be looking at environmental performance and sustainability to assess whether it achieves EcoHomes "Excellent" rating and the Energy Savings Trust's Best Practice standards for energy efficiency.'

The supply chain involved in constructing the house will also have an opportunity to shine. Various renewable energy sources will be used to try to improve on the Jabhouse's existing potential for low energy living. For example, solar power to heat water can be incorporated to improve environmental efficiency and reduce running costs still further. 'But we'll never lose sight of the comfort of those who will live in the homes,' says Paul Ensch. 'As well as looking for the highest levels of environmental efficiency, we intend to ensure the Jabhouse is an enjoyable and welcoming place to live.'

End-of-life

The design of the Jabhouse accommodates the Joseph Rowntree Lifetime Home requirements – it provides internal spaces that are flexible and adaptable as occupants' needs change over time, without creating major waste in the process of making changes. For example should the residents become immobile through illness or old age the house can incorporate a stair lift. Alternatively internal walls can be moved to create bigger family rooms or smaller individual bedrooms. The emphasis is on adaptability.

As well as demonstrating sustainable principles through its lifetime, the components of the Jabhouse can be fully recycled at end-of-life. The EPS can be recycled into new EPS and the wood can be re-chipped for use in panel products.

What of the financial costs of all this? Paul Ensch says, 'We'll be looking at costs as part of our demonstration build at the Innovation Park to ensure they remain comparable with traditional building techniques. BRE will assist in this process by reviewing the data we present to provide us with an independent and impartial assessment of the costs of the project.'

As it stands, the Jabhouse offers the type of MMC option that the government is hoping will meet the UK's need for swiftly-built, high-quality, moderately-priced homes in community settings. The Jabhouse was a finalist in the last round of the ODPM's 'Design for Manufacture' competition for MMC properties. The question to be answered is, 'can good be even better'?

Visiting the Jabhouse

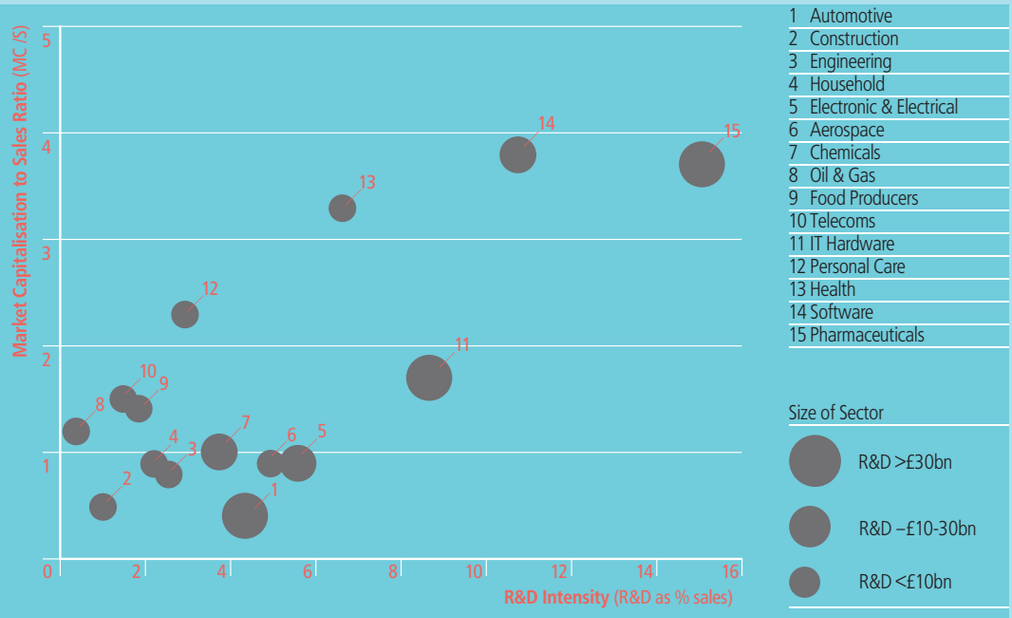
The Innovation Park is open to visitors. Expected to open in June 2006, the completed Jabhouse will have a conventional ground floor layout, with a working kitchen, living room and WC. The first floor will be an exhibition space for supply-chain partners, the second floor will include a bedroom with en-suite bathroom, a study area and a view of the 'room in the roof' capacity. Throughout the house, visitors will be able to see the SIPs through a variety of vision panels.

Visits to the house can be arranged by calling Rachel Wells on 01923 664590 or e-mailing wellsr@bre.co.uk.

For more information contact Angela Swann, Tel 01923 664669, Email swanna@bre.co.uk

A DEN OF INNOVATION

A initiative to make new ideas and technology available to the construction industry is being announced this month. The 'Innovation Den' will effectively provide participants with an outsourced R&D partner, reports Andrew Williams.



Market cap to sales ratio vs R&D intensity
Source: DTI R&D Scoreboard 2005

BRE is planning to launch the **Innovation Den**©, to help the construction sector gain access to new innovations in a simple, network-based programme of support and additional services.

It has long been recognised that technological innovation offers the only real, sustainable and profitable point of differentiation for companies operating in the highly competitive markets that now typify the world economy.

Group 5 – with the least level of R&D contains the construction industry

According to the DTi R&D Scoreboard 2005, companies with the highest levels of R&D have, over the last eight years, achieved growth of more than ten times that of companies with low levels of R&D. Industry is split into five groups, the top group is represented by pharmaceuticals, biotechnology and health, whereas the lowest group – group 5 – with the least level of R&D contains the construction industry.

With R&D levels falling across UK industry there is increasing concern amongst large companies as to how they generate a stream of innovative products, services and ideas allowing them to compete on a global stage.

The UK is facing increasing competition from rapidly growing economies including India and China,' said Science and Innovation Minister Lord Sainsbury in the DTi R&D Scoreboard Report 2005. 'In order to meet these challenges the UK must build on its strengths of science and innovation, competing on ideas not on low wages.'

The practice of innovation needs innovation

For many organisations, the standard approach to innovation and product development has become so staid, if it exists in the first place, that it is stifling the very life-blood of the company. The practice of innovation needs innovation, companies need a new way of discovering innovation, a way that is repeatable, that has direct benefits to the business and that demystifies the whole process – this is where the Den comes in.

The Innovation Den will allow commercial customers and technology innovators, to efficiently and effectively identify and connect to each other in a managed format.

Membership of the Den will provide the ability to search and connect with each other, begin initial steps towards structuring a commercial relationship and ultimately deliver commercialised technology and intellectual property (IP).

The Den will provide members with general and targeted briefings and support on what the future brings in terms of:

- new opportunities and technologies
- advances in materials and processes
- processes to identify IP needs and support/guidance to fulfil them
- opportunities and barriers stimulated by regulations and changes in markets
- a gateway to other technology providers
- technical and financial due diligence
- a bespoke service to mine technology providers.

The Den will deliver these through a programme of communications, events and themed 'speed dating' sessions aimed at making innovation easy and accessible to all those who subscribe. It will work with other Government initiatives to facilitate the maximum connectivity and advantage for the construction industry.

The Innovation Den will effectively provide members with an outsourced R&D partner equipped with the skills and networks to help provide a platform for innovation.

Innovation markets are at a very early stage of exploitation, and yet each day more and more enterprises are seeking some form of sustainable competitive advantage. But there are many barriers for UK plc to overcome, including a lack of innovation, a significant growth in global competition and severe reductions in in-house R&D capabilities due to 'downsizing' trends over the past ten years.

The key issue is not a lack of technology

Perversely, the key issue is not a lack of technology. The total R&D spending by companies and government in the UK was £21bn in 2004 – the problem is the inability to efficiently find the available technology and then derive commercial advantage from it. Interestingly, technology innovators also lack established and verified routes to market and commercial customers that allow them to commercialise their technology.

This lack of market connectivity between the commercial market and the technology owners is further aggravated by the different corporate cultures, cultural language and internal drivers that focus the organisations in their daily operations.

Commercial customers do not have 'bridging the intellectual divide' as a core skill

Technology transfer is as much an art as it is a logical commercial process, and more often than not commercial customers do not have 'bridging the intellectual divide' as a core skill, and technology owners are driven by longer time scales and research funding objectives.

To overcome these barriers the Innovation Den brings together the intersecting needs of commercial customers and technology owners, in a repeatable, initially light-touch process that is managed and facilitated by experienced Den Managers.

Membership of the Innovation Den will bring the following benefits:

- unique access to opportunities currently off their radar
- pre-qualified companies and innovators
- pre-qualified needs/problems
- pre-qualified technologies
- assured access and security and integrity
- predictable and transparent information exchange
- safe and trusted service and online search engine.

Further information on the membership options and services offered by the Innovation Den, including a prospectus will be available shortly.

To learn more now contact Andrew Williams,
Tel 01923 664563, Email williamsa@bre.co.uk

REFURBISHMENT– THE NEXT REGENERATION

The REFURB2006 conference on housing refurbishment is being held at BRE on 12 July. Juliet Woodcock**, Editor of *Refurbishment and Regeneration* magazine previews the conference.**

The appearance of John Prescott at last year's OFFSITE2005 exhibition emphasised the importance of prefabrication and modern methods of construction (MMC) in meeting the UK's housing shortfall. However, as the furore over the ODPM's Pathfinder project plans have proved, conserving and improving our existing stock has an equal, if not more important part to play because more than 95 per cent of dwellings in existence today will be here in 30 years' time.

REFURB2006, a one-day conference dedicated to 'better and more sustainable refurbishment for housing' is being held in recognition of this. Dr Peter Bonfield, the Managing Director of BRE's Construction Division, says, 'There is much talk about modern methods of construction and off-site manufacture for new build while the importance of refurbishing our existing stock is often overlooked. Although MMC is crucially important, new build accounts for less than 20 per cent of the ODPM's Sustainable Communities Plan. By far the bigger challenge is how we manage and refurbish existing housing stock and bring it up to modern standards of energy efficiency.

'We must not lose sight of refurbishment because the typical semi-detached house makes up 80 per cent of the UK's property portfolio and most of these houses are going to be around for at least the next 50 years. You can do really exciting things with existing properties and make them an imaginative part of the urban living environment. We want to communicate that at REFURB2006.'

The conference will be all about advising on options for refurbishment. For example, if you have a heritage building, how do you conserve it? What are the potential treatments? Or, if you are working on a 'hard to treat' dwelling, what innovative technologies are currently available that meet not only existing Building Regulations but also those in the pipeline?

REFURB2006 will explore the complex issues surrounding refurbishment, and host wide-ranging discussions for delegates to share views on the topics covered.

The conference programme will kick off on the topic of 'Sustainable Refurbishment'. In this session, speakers and delegates will discuss the issues around low carbon technologies and recycled building materials, and look at the drive for greater resource productivity and reduced life cycle impacts.

The next topic will be 'Raising the Standards' which will examine the challenges faced by those aiming to deliver refurbishment projects that fulfil the Decent Homes agenda, offering enhanced energy efficiency and environmental performance.

The closing sessions of the conference will focus on 'Heritage Regeneration and Conservation.' The difficult issues surrounding conservation or preservation will be brought to the fore, and there will be discussion of the treatment of heritage buildings, master planning and designing for heritage, as well as regenerating communities.

Within all these topic there will be the cross-cutting theme of 'Innovations in Refurbishment', with the focus on capturing some of the lessons that the UK can learn from international best practice.

Commenting on the programme, Peter Bonfield says, 'The seminars are intended to deal with general housing stock as well as listed or heritage properties. For instance under the Decent Homes initiative we are looking at innovative ways of recycling the thousands of kitchens and bathrooms that are ripped out and skipped for landfill. There are options to extend the life of kitchens and bathrooms, or for re-using components, that are far more sustainable and will support the drive towards zero carbon emissions.

'There are already many examples of advanced technologies now finding their way into what is perceived to be a quite traditional repair situation. The conference will raise people's understanding of what the issues are and what options are available to them. In this way, building professionals can make more informed decisions in their projects.'

For information on attending REFURB2006, Tel 01923 664800, Email events@bre.co.uk, or go to www.bre.co.uk/events

Victorian and Edwardian home renovations

Ground-breaking research into the way developers tackle the renovation of Victorian and Edwardian houses could bring thousands more homes on to the market in the UK.

The BRE Trust is funding an extensive survey into the technical, economic, environmental and social implications of retaining homes built in the UK between 1840 and 1914.

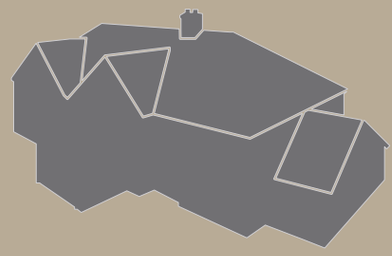
The outcome could have far-reaching effects on the UK housing market. The survey will inform developers' decisions on whether and how to renovate Victorian and Edwardian houses. It will also enable comparisons between the costs and benefits of renovating homes and demolishing them to build afresh.

Tim Yates, Project Director says, 'Renovating and refurbishing older housing stock involves more complex decision making than might be immediately apparent. As well as being economically viable to restore, the resulting homes need to be energy efficient and easy to maintain. They need to be located in areas where people want to live and where there are adequate transport links and social infrastructure such as shops and schools.

'In short, there is no simple answer to whether refurbishment or renewal is the best option. Much depends on circumstances and the answer is likely to be different according to how the various issues stack up. What our project will do is provide a standard methodology that will make comparisons and decision making much easier.'

The main focus of the survey will be on 'sustainability' both in terms of the materials and technologies used for renovation and refurbishment, and the on-going economic and environmental effects of living in the houses after refurbishment. Heating, lighting and sanitation, for example, will have to meet or exceed the best modern standards.

The Sustainable Refurbishment of Victorian and Edwardian Houses report will be available from the BRE Trust in June 2006. Tim Yates will speak on the research project on 12 July at REFURB2006.



REFURB2006
12 July 2006
BRE Watford

– Bringing homes up to modern standards
– Sustainable refurbishment
– Regeneration and conservation of buildings

www.refurb2006.com
Tel 01923 664800
Email events@bre.co.uk

REFURB2006

FIRE SAFETY IN ROAD AND RAIL TUNNELS

The public and media interest in road and rail tunnel fires reflect the level of the harm they can cause and the understandable fear they create. Designers and engineers need an appreciation of a wide range of disciplines if they are to provide safe tunnels, as Martin Shipp**, Head of BRE's Centre for Fire Safety in Transport, explains.**

Public concern about tunnel fires stems partly from the scale of the losses in human life and property, and resulting damage to business and transport systems, and partly from the nature of the hazard – a fire in a tunnel, underground and perhaps many miles from safety.

And unlike other difficult environments, such as industrial or offshore structures, tunnels are used by the ordinary public when travelling by train or car. Among serious tunnel fires in recent years are:

- Mont Blanc Tunnel in France/Italy, March 1999, 41 dead
- Kaprun Funicular Tunnel in Austria, November 2000, 155 dead
- Tauern Tunnel in Austria, May 1999, 12 dead
- Gotthard in Switzerland, October 2001, 11 dead
- Frejus in France/Italy June 2005, 2 dead.

The UK experience of serious tunnel fires is relatively limited, but includes the Kings Cross (1987, 31 fatalities) and the Channel Tunnel (1996, no fatalities) fires.

Tunnel fires involve all aspects of fire safety science, engineering and management. Designers or engineers considering fire safety as part of a tunnel design must have an appreciation of a wide range of disciplines if they are to provide a safe tunnel.

Engineering systems

The two main fire related areas of concern for tunnel engineers have generally been structural safety and ventilation, particularly smoke ventilation.

Structural fire protection in a tunnel serves a number of purposes, including protection of the means of escape and/or safe havens (refuges), assisting (or protecting) rescue efforts, avoiding major business interruption, and avoiding complete or partial loss of the tunnel.

The designer must consider the scenarios, the risks, the role in protecting life and the structure as a system, and the crucial commercial and/or cost decisions that inform this process. Decisions must be made regarding the design fires, their size and location, how much protection (if any) to apply, and how much damage is 'acceptable'. There is an increasing body of knowledge available to help in characterising the design fire, and computer modelling tools have been available for some time to assist in the assessment of heat and smoke flow.

Similarly, the provision of tunnel equipment is an essential part of the fire safety system. It will include assisting the means of escape with lighting, emergency lighting and communications, power for essential safety systems, and providing fire fighting facilities.

Many tunnels will have smoke control systems that need to be properly protected against direct fire attack, hot smoke, and power loss, but also will be integrated with the operation of any ventilation equipment. In both the Channel Tunnel and Mont Blanc fires, the inappropriate operation of ventilation systems appears to have had a negative impact on the actual or potential outcome of the incident.

Communications systems are critically important. In the Channel Tunnel and Mont Blanc fires, the loss of communication cables through the tunnel appear to have had an impact on the handling of the incident. Other aspects of equipment performance that are of importance include:

- ensuring communication channels do not become overloaded
- applying appropriate detector logic and detector response
- being able to identify the location of the incident in the tunnel
- ensuring adequate speed of response of essential equipment
- avoiding spurious problems that confuse the response
- avoiding false alarms.

All of these issues need to be considered during design and, where appropriate, approved products and services should be specified.

Fire fighting
Fire fighters face particular problems with tunnel fires, including long communication lines, the difficulty of getting to the fire, the distance from facilities and support, the growth in the size of fire (as a result of these delaying factors), and problems of joint action (language and procedures) when two countries are involved.

Recent events have highlighted the need to integrate fire safety with other emergency response strategies. This requires coordination between network staff, trained staff and emergency services, adequate and appropriate access for emergency services, and the provision of services (eg water, communications).

As well as fire, the threats that may need to be considered include CBRN (Chemical, biological, radiological, nuclear attack), explosions, derailments, collisions, earthquakes (not in the UK) and other incidents, some or all of which may involve a resulting fire. The need to design safety systems that can cope with any, or any selection, of these types of incident, requires careful thought.

Planning
Careful planning, in advance of any formal design, is becoming increasingly important. In selecting the fire safety philosophy and designing the fire safety systems for a tunnel there are a range of aspects to consider.

Of these it is the selection of the design scenarios which is often most controversial. The need to select one or more events based on the location of the fire, its size, rate of growth and smoke and toxic gas production will be fundamental to the design of, for example, structural protection and ventilation (for smoke control). Often such events will be selected on the basis of probability, and the acceptable values will require different criteria for life safety or property protection. In adopting such a risk-based approach there are likely to be differences of view from the client and/or operator, the regulator or enforcer and the general travelling public.

There are therefore a number of issues to consider, including:
- constructing decision flow-charts and anticipating every possible (or probable) event
- carrying out a risk analysis – and determining what assumptions are appropriate and how to interpret the results
- balancing the needs for life protection and property (asset) protection
- selecting fire protection and detection products to ensure that they work as claimed
- doing full 'emergency' simulations, for example as part of the commissioning process, to ensure that engineering systems and human procedures will work properly if needed
- maintaining good practice (eg ensuring that emergency doors are kept closed over the life of the tunnel)
- regular checking of safety systems, and ensuring that faults are rapidly corrected
- considering how the incident will cascade – almost every major incident is made up of lots of interacting events, all of which are individually unlikely
- the management implications – it may be this issue that proves critical in the event of an incident.

Management
A number of management issues can have a significant impact on the outcome of an incident. They need to be carefully considered at the design stage and at the initial opening of a tunnel, and be maintained during its operational lifetime. These include:
- ensuring an appropriate response by security or safety staff
- ensuring that staff (both one's own and others using the system) are well trained in a range of emergency procedures
- recognising and responding to a variety of passenger responses and behaviours during an incident
- being able to react and respond to the speed of events during an incident (for example, opening emergency exits)
- arranging effective communications between relevant agencies and emergency services
- arranging for detection and alarm provisions to be continually checked and reassessed once the tunnel is operational
- providing for communication and control systems to be routinely tested under 'realistic emergency' conditions, and ensuring that key personnel are not overloaded
- ensuring that all safety equipment is subject to routine, documented maintenance, testing and repair.

Design engineers must understand how the effectiveness of their designs will be influenced by – and influence – safety management, and be trained to identify all of the management implications, implicit and explicit, in their fire safety designs.

Human behaviour
A successful emergency plan takes account of the behaviour of people in an emergency – it is not realistic to expect them, for example, to quickly learn how to open a safety hatch. The first few minutes in an incident are critical and it is essential to motivate vehicle occupants to make their escape. Research findings have demonstrated the importance of 'cues' and communication between vehicle occupants, as well as communications between staff and passengers.

An understanding of human behaviour and evacuation responses in various possible emergency situations, and in the unfamiliar environment of a rail tunnel, is needed for providing successful safety systems. Factors the designer, and later the operator, need to consider include smoke movement speeds, the intelligibility of signage, communication between people and with train and tunnel occupants, and disabled egress and other disability issues. It is important to learn from actual incidents, false alarms and drills, etc.

New challenges
A number of trends are adding to the challenge of ensuring safety from fires in tunnels. There are more – and longer – rail and road tunnels being built, which are increasingly critical to the whole social and commercial infrastructure. Traffic densities are growing, with little spare capacity or safety margin, and larger, more combustible loads being transported. In addition, new and potentially more hazardous fuels are increasingly being introduced, such as LPG and hydrogen.

In Europe, tunnel safety regulations are being developed for road tunnels (through the EC Directive on minimum safety requirements for tunnels in the Trans-European Road Network) and rail tunnels (through the EC Interoperability Directives on the safety of the Community's railways).

Research is needed to reduce the risk of fire and to find ways of making people escape quickly in the event of an incident. The data, assumptions, models and design methodologies we use must be well founded and reflect what happens in the 'real world'.

Conclusions
We need to learn lessons from real incidents so that these are less likely to reoccur, and identify the 'near miss' features. It is essential that information from real fires is fed into the fire science and design knowledge base. We must develop and maintain the dialogue between tunnel designers, vehicle designers, fire investigators, fire scientists and fire engineers.

Fire safety engineers and designers need to ensure that they identify all of the management implications, implicit and explicit, in their designs. They should consult with fire safety managers from the earliest stage of the design process, and ensure that the concerns of these managers are taken into account.

Long-term issues such as change of use and maintenance must be considered, and should include consideration of exceptional situations (such as equipment failure).

The management implications of the design should be stated and recorded, and made available to later managers. Designers and engineers need to be as sure as possible that managers will be given appropriate powers and resources, and their fire safety roles will be an explicit and accountable part of their jobs. Or they must ensure that their design makes no such management demands.

For more information contact Martin Shipp, Tel 01923 664960, Email shippm@bre.co.uk or visit www.bre.co.uk/fire

'S' IS FOR SCHOOLS AND SUSTAINABILITY

There is now a real opportunity to create schools that inspire their pupils and communities to achieve a more sustainable future. But this is easier said than done – sustainability isn't something you can just bolt on. It involves a complex set of issues that need careful integration to be fully successful, as Andrew Williams **reports.**

The experience path
The aim is to achieve a balance of sustainability elements that provide the greatest overall sustainability performance from the available resources. Using the accumulated experiences available from 'experience trading' others will be able to follow an optimal (for them) experience path that incorporates a balanced selection of sustainability features.

The almost daily warnings of the hazards we face from not achieving greater levels of sustainability, are usually closely followed by warnings that we're not achieving them. Perhaps this is because the crunch time for the better known consequences – such as climate change and energy shortages – still seem to be some way off. But they won't be far off for those now at school, or for their children.

That's why improving the sustainability of our schools is so vital. These buildings don't just directly impact on the environment and the health and well-being of their current occupants – they have a unique influence on the next and future generations, who will have to actually live more sustainably or live with the consequences.

And with this urgent need comes a fantastic opportunity in the form of the Government's Building Schools for the Future initiative – the biggest school construction and refurbishment programme for decades. Over the next 15 years the majority of schools will be rebuilt or refurbished. This represents a chance to bring about a change in sustainable learning environments that may not arise again for generations to come.

You can't just bolt it on

But there is more to sustainability than adding on a few features to an existing building or design – a wind turbine to reduce energy use here, paper recycling there, although these are a start.

A clear idea of what a more sustainable school actually is must be established, along with the means of achieving this. If sustainability features are to work properly, they must work in concert with each other and with the rest of the structure the curriculum and the community. Sustainability is often seen as an architectural statement or visible addition to the building rather that a philosophy that pervades all aspects of the school, its occupants and the community. But if treated in this way there is the danger that it will be a 'bolt on' and the real benefits of 'tunnelling' or systems thinking – ie achieving a step-change improvement through innovating with new ideas rather than existing practice, will be missed. In terms of the building, architects and M&E engineers must work more closely to provide a radical change in the relationship between form, fabric, M&E, internal space and its impact on occupants, education and sustainability.

Sustainability is much more than addressing one or two high profile issues. It includes a wide range of inter-related factors that involve the buildings and sites, and their occupants and local and global environments. These include transport to school, the food and drink consumed there, the energy and water used, the purchase and waste of materials, the inclusion and participation of pupils and community, and more.

The many elements involved can work against each other and so should not be considered in isolation. The sustainability effort must cover a range of issues in an integrated and balanced way to achieve the greatest overall level of sustainability from the available resources.

Learning from experience

A few schools have had some success in integrating sustainability into their design, construction and operation, and have benefited from the resulting reduced resource use, waste and costs, etc, while providing an outstanding service and example to their pupils and communities.

Others have not been so successful – sometimes achieving great things in one or two features of sustainability, but with the impact of these negated by poor performance elsewhere.

Achieving a balanced, integrated level of good performance across the spectrum of sustainable elements is no easy task. As well as a clear vision of what constitutes a sustainable school and how this can be achieved, readily available, best practice guidance is needed. It would be of great benefit if those responsible for the design and performance of schools could learn from the experiences of others who have faced similar issues. Some form of experience trading system is needed, in which schools can gain from the success of others in certain areas of sustainability, while passing on knowledge gained from their own experiences.

The 'experience path' shown in the diagram indicates that while it is best to be at the top in all aspects with a level profile, it might be more appropriate (because of available resources, and site or community issues, etc) for the line to be flat at some lower level rather than high in some areas and low in others. This would indicate that the whole system is in balance and that excessive resources have not been spent on one issue only for it to be held back, ie wasted, by other poorly performing areas.

Establishing the vision and achieving it

The BRE Trust is working with others in the schools supply chain to develop a network that engages all those who specify, design, build and use schools, in defining the necessary sustainable vision and establishing the means of achieving it.

One of the tools now being developed to facilitate this, is a website that will present both best practice guidance and members' experiences in easy-to-use information packages. These will be adapted to the needs of each key stakeholder involved in school development and use, and to the needs of new schools, schools being refurbished, and those that are in use.

With the help of the accumulated experiences available from practioners (LAs), the supply chain and network members can follow an optimal 'experience path' through the complexities of achieving sustainability, which incorporates a balance of integrated elements and supports people at a grass-roots level.

For more information on the BRE Trust work, contact Andrew Williams, Tel 01923 664563, Email williamsa@bre.co.uk

MAKING NO BONES ABOUT IT

When Bristol-based construction company, Pearce Group, unearthed an Anglo Saxon burial ground on the site of an £11 million Waitrose store development, they faced a nine-week delay in the project. With the help of the Construction Lean Improvement Programme (CLIP), this time was made up.

Demonstrably committed to continuous improvement, Pearce Group has a burgeoning list of awards from across the industry that demonstrate its success. Yet the company has never had the adoption of a new technique so severely tested as when it implemented CLIP – the Construction Lean Improvement Programme – on the development of a new Waitrose store at Wallingford in Oxfordshire.

Just weeks into the project, the Pearce team discovered an Anglo Saxon burial ground. Archaeologists exhumed around 200 bodies causing a nine-week delay. As if that wasn't enough, the team was struggling with the effects of Japanese Knotweed on the site, plus a fibre optic cable which was feeding Reading and an inconveniently located electrical sub-station.

'From a contractor's perspective, it could hardly have been worse,' says Andrew Dale-Harris of Pearce. 'In addition, the site – right on Wallingford High Street – was very difficult to work on. In fact, the structure had to be built from the inside out.'

According to Steve Ward of the CLIP team, 'Pearce contacted BRE, which runs the CLIP programme in the UK, to find out whether we could help them make up time on the project. We immediately organised a "CLIP intervention" which involved two supply chain workshops to study the "start to watertight" phase and the "fit out". From this point, the Wallingford project turned into a race against the clock.'

Under pressure

The CLIP team set up urgent meetings with the senior management teams of all Pearce's suppliers, to achieve buy-in to a concept called CLIP Lean Relationships. Essentially, this mode of working involves intense collaboration to achieve fast progress on a project.

'We organised a rapid-fire programme of visits to about 20 key suppliers,' says Steve Ward, 'to explain how the model would work and what would be different about the Wallingford project – and to agree the commitments the suppliers would have to make.'

Led by a CLIP engineer, representatives from all the organisations involved gathered in one room and wrote down the work they needed to do to get the project back on track.

'We moved to daily and weekly CLIP meetings on site where the available team members met to discuss the project plan and make any amendments based on recent events,' says Ward. This helped the whole team understand what everyone else was doing and stay focused on the plan.'

The outcome

As a result of these efforts the team achieved a time saving of 16% on the original schedule. This meant the nine-week delay caused by the discovery of the Anglo Saxon burial ground was fully recovered and the store opened on time.

'The CLIP programme worked well for us on the Wallingford project,' says Andrew Dale-Harris. 'We found CLIP Lean Relationships very useful and it's a concept we'll be looking to use further in the future.'

So, the shoppers of Wallingford got their new supermarket, Pearce completed its project successfully, the skeletons were taken away for further investigation, and the CLIP team had the satisfaction of seeing its lean relationships model run like clockwork. After a shaky few weeks, the project ended up being a rattling good success all round!

More about CLIP

CLIP comprises bespoke adaptations of well-proven performance and productivity improvement techniques from the Japanese car industry. The CLIP programme is designed specifically for the construction industry and run in the UK by BRE.

'CLIP is not about making cuts and squeezing more out of what's left,' says CLIP Director Martin Watson. 'Instead, CLIP techniques enable organisations to identify and minimise activities that fail to add value, leaving more time for those that do.'

Since it was set up three years ago, CLIP has worked successfully with more than 80 companies from right across the construction supply chain, with most achieving productivity improvements of up to 50% in key processes.

'CLIP provides the knowledge and practical skills to take the highly theoretical topic of lean construction and turn it into a practical tool that can be implemented effectively,' says Martin Watson. 'In addition, the principles transfer successfully between similar areas of work. This is why the DTI gives financial backing to lean improvement programmes across 15 UK industry sectors including aerospace, ceramics and metals manufacturing.'

A seminar at BRE Watford on 23 May will allow delegates to: share the experience of going lean with leading UK construction companies; understand how applying lean principles can benefit a company or supply chain; and gain a full understanding of how CLIP works and how to access its resources and support.

For more information about CLIP contact Martin Watson, Tel 01923 664638, Email watsonm@bre.co.uk

Recent publications

Digests
Concise reviews of building technology.

Digest 498 Selecting lighting controls
Lighting controls can give important energy savings, and their reasonable provision is required by Building Regulations whenever lighting work is carried out in buildings that are not dwellings. This Digest describes the common types of control and how to calculate energy savings. It will be of interest to building owners, designers, building services contractors and building control bodies.

Good Building Guides
Practical guidance on building design and construction.

GBG 67 Achieving airtightness
Aims to give the best advice on achieving airtightness in new buildings. It is based on data obtained from laboratory testing and observations made while undertaking air leakage audits in buildings. It is in three parts:
Part 1 describes common air leakage paths and sets out the principles to follow when developing energy efficient construction details.
Parts 2 and 3 provide practical guidance on airtightness techniques appropriate to most building types.

Information Papers
The latest BRE research information and how to apply it.

IP 1/06 Assessing the effects of thermal bridging at junctions and around openings
This guidance is primarily intended for junction and opening details that are not as recommended in 'Accredited construction details' or MCRMA/EPIC guidance.

IP 2/06 Modelling and controlling interstitial condensation in buildings
To run the models, certain properties of materials need to be known. The paper discusses the availability of data on these properties and the appropriate boundary conditions that should be used, and makes recommendations on which models should be used for different types of structure.

IP 3/06 Reinforced concrete service life design. Part 1: Overview
Part 1 of a three-part information paper providing an overview of a service life design system developed by BRE for reinforced concrete structures. This system can be used to assist structural designers in meeting their clients' requirements for service life, functionality and maintenance.

IP 4/06 Airtightness of ceilings. Energy loss and condensation risk
Typically about 20% of the air entering a house leaves via its loft, adding to the risk of condensation in the loft and reducing the energy efficiency of the roof. This paper describes the airflow routes between a house and its loft and the steps that can be taken to reduce the flow.

Prices
Digests and Good Building Guides are £12 each, or each part (£8 for Connect members). Information Papers are £9 each (£6 for Connect members).

To obtain any of the publications listed above or to subscribe to BRE Connect:
– www.BREBookshop.com
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Diary of forthcoming events

BREEAM

Courses at BRE, Watford covering the technical contents of BREEAM schemes and giving details of the assessment processes:
– 30-31 May and 21-22 June 2006
EcoHomes (BREEAM for homes) assessor training
– 28-29 June 2006
BREEAM Schools assessor training
– 4-5 July 2006
BREEAM Industrial assessor training
– 4-5 July 2006
BREEAM Offices assessor training

13 July 2006 at BRE, Watford
Introduction to BREEAM and EcoHomes
Free seminar on meeting the demands of a sustainability brief,

Contact: 01923 664462, breeam@bre.co.uk

Building better schools workshops
A series of workshops at BRE, Watford, guiding attendees through the priorities of good school design:

– 9 June 2006
Realising the vision – incorporating best practice into procurement.
– 11 July 2006
Security in schools – how to design-in security.
– 12 September 2006
Designing for flexibility and educational functionality – best practice today and flexibility for the future.
– 12 October 2006
Renewable energy and the school's carbon footprint – how to include 10% renewables and reduce waste.
– 14 November 2006
Fire – designing to maximise safety and minimise risk.
– 7 December 2006
Delivering IT provision for the future – how to deliver an IT strategy that meets the needs of education, the business and the building.

Contact Caroline McGill: 01923 664800, mcgillc@bre.co.uk

Fire risk assessment training
A series of courses at BRE, Watford on the key aspects of fire risk assessment (see page 3):
– 22 May and 26 June 2006
Fire risk assessment training – module 1, Fire legislation
– 23 May and 27 June 2006
Fire risk assessment training – module 2, Premises management
– 24 May and 28 June 2006
Fire risk assessment training – module 3, Fire science and fire in buildings
– 25 May and 29 June 2006
Fire risk assessment training – module 4, Principles and practical aspects
– 26 May and 30 June 2006
Fire risk assessment training – module 5, Practical risk assessment
– 23 May 2006
Free awareness session: New fire and disability legislation – are you prepared?

Contact: 01923 664883, fra@bre.co.uk

Fire safety
Courses at BRE, Watford explaining the changes being implemented next year in line with the Regulatory Reform (Fire Safety) Order:
– 30 May 2006
Fire safety course for office managers
– 5 June 2006
Fire safety course for hotel managers
– 8 June 2006
Fire safety management course for hospitals
– 9 June 2006
Fire safety design course for hospitals

14-15 June 2006 in York
Fire Safety Engineering
Will give Building Control and associated professionals a basic understanding of fire engineering.

Home Inspector training
Series of courses at BRE Watford on key issues for home inspectors and other building professionals:
– 22 June 2006 – **Building Defects**
– 23 June 2006 – **Walls and Cracking**
– 26 June 2006 – **Roofing**
– 27 June 2006 – **Heritage buildings**
– 28 June 2006 – **Services and utility installations**
– 29 June 2006 – **Inspection of non-traditional and modern methods of construction**

Home Condition Report and Home Energy Report Training
Three days of training, on 22 May, 23 May and 21 June 2006, to:
– survey dwellings consistently and complete Home Condition Report (HCR) to a standard format
– competently undertake energy efficiency surveys
– provide basic energy efficiency advice, and hence produce the Home Energy Report element of the HCR.

Contact: Monica Cross, 01923 664829, homeinspector@bre.co.uk

Other events and training

23 May 2006 at BRE, Watford
Practical application of lean in the UK construction industry
Many UK construction companies have made improvements of up to 50% on quality, cost and delivery through the Construction Lean Improvement Programme (CLIP).

31 May-1 June 2006 in Port Talbot, Wales
Implementing OHSAS 18001 and safety management
The principles of OHSAS 18001, and how to advise and plan its introduction and monitor effectiveness.

1 June 2006 at BRE Watford
Disability access awareness – the DDA
Will raise awareness of construction professionals, building managers and owners of disabled access issues and the needs of disabled people.

1 June and 19 September 2006 at BRE, Watford
Part L & EPBD Workshop
CPD workshop explaining the implications for non-domestic buildings of the major changes.

12-16 June 2006 at BRE, Watford
Building Services Integration with KNX/EIB
Allows delegates to effectively deliver the benefits of EIB, and provide value-added service to clients.

13-14 June and 11-12 July 2006 at BRE, Watford
SBEM training
SBEM is a computer program that provides an analysis of a building's energy consumption. This course is aimed at building designers and consultants with a basic understanding of energy use and building services, and Building Control practitioners wanting to specialise in energy calculation and Part L compliance.

15 June 2006 at BRE, Watford
Introduction to sprinklers for architects designers and specifiers
A one-day course on the costs and benefits of sprinklers.

20-22 June 2006 at BRE, Watford
Access auditing
Addresses existing commercial, public and domestic buildings, as well as new build.

12 July 2006 at BRE, Watford
REFURB2006,
Leading experts will share their knowledge of improving the quality, performance and energy efficiency of existing housing stock.

27-28 September 2006 at BRE, Watford
resource06
Seminars, networking events and an exhibition relating to the low carbon and sustainable building agenda.

Further information
For further information on contact BRE Events – 01923 664800, email events@bre.co.uk or visit www.bre.co.uk/events

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