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ADJACENT PLANNING & BUILDING CONTROL TODAY

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IN THIS ISSUE

Covering 192 pages, this issue details topics from developing a Local Delivery Plan to the pitfalls of failing to plan for asbestos removal. Highlights include:

James Ritchie – The Association for Project Safety
Dr Roberta Blackman-Woods MP and Kate Green MP
Adam Dodgshon – Principal Consultant, Planning and Advisory Service

A New Model for Affordable Housing

Stacey Temprell at Saint-Gobain tells us how a collaborative student-designed project became one of the first of its kind – designed to some of the world's most stringent design codes

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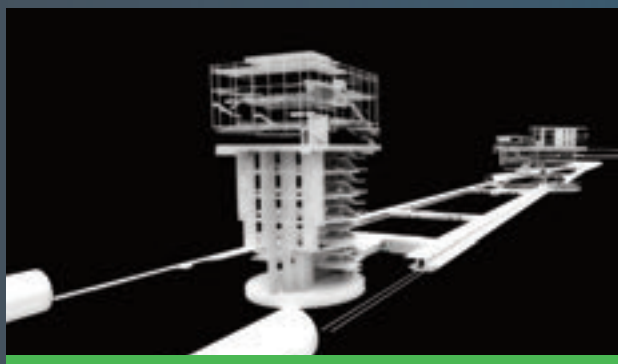
British Gypsum discuss how using online tools can enable specifiers to excel in a BIM world



SPECIAL FEATURE: BIM the Crossrail way

Malcolm Taylor of Crossrail Ltd explains what BIM means to Europe's largest construction project

BIM: Simplicity and opportunity

Clearbox outline how BIM is transforming the global design, engineering and construction market

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Foreword

Steve Evans BSc(Hons) MBA C.Build.E FCABE
Senior Area Technical Manager
National House Building Council (NHBC)

The infamous line "its Building Regs, but not as we know it" was delivered by an official from the DCLG at a recent NHBC Building for Tomorrow Event, and referred to the imminent publication of the consultation into the Housing Standards Review. That was in March of this year and imminently actually meant September. If only my wife would accept this when it came to timescales for DIY, "Yes dear, I will do it imminently..."

The consultation itself is a "Technical Consultation" only in that the concept of these standards a) being set, and b) being put into building regulations is not up for debate. What is up for comment is the details of how the system will operate and the actual technical details proposed in the amended, and in one case, new Approved Documents.

So what will the system under consultation actually mean to professionals in the planning and building control professions?

In a nutshell, this brave new world will allow planners to select "optional" standards in respect of Access and Water for new homes built in their area. In order to do so, the planners will need to demonstrate that there is both a local need and that the setting of such a requirement will not make development unviable in their area. This needs to be done through the local plan process. Where the planning authority wishes to select an optional requirement it must only select those written in the building regulations. The Code for Sustainable Homes will be wound down from the date of publication of the documents in the Spring of 2015 and the new system will come into being in Autumn 2015.

Additionally there is also a new standard "Part Q – Security" which the government is proposing to be mandatory for all new homes as well as amendments to Part H6 – Solid Waste storage which proposes to tackle "bin blight".

When a local need and viability can be demonstrated and set as a planning condition it will be for the building control body, public or private sector, to enforce the increased requirement through the building control system, presumably informing the LPA when it has completed the dwellings so that the condition can be discharged.

There is also a Nationally Described Space Standard, which again the planning authority needs to select based on local need and viability through the local plan process. However, this will remain outside of the building regulations with responsibility for the planners to enforce, although the government are interested to know if there may be a role for building control to play ensuring it is done consistently.

The consultation closes on 7th November 2015 and I would urge all planning and building control professionals to not only read it, but actively contribute to the consultation responses of your professional body or employer. It will be up to us to ensure that the system works and that the additional layers do not lead to dissatisfaction and most of all, delays in the construction process. ■

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Introduction

Welcome to the last edition of Planning and Building Control Today for 2014.

Not long after reading this issue, the 'Technical Consultation' part of the Housing Standards Review will end, and as Steve Evans mentions in his Foreword, what is up for comment is the details of how the system will operate and the actual technical details proposed in the amended, and in one case, new Approved Documents. It is up to industry to actively contribute to the consultation responses and make their voice heard, so we would urge our readers to respond if they haven't done so already.

Heading into the winter months inevitably means we will all be flicking that switch to heat our homes – bringing about the potential for hefty increases in our energy bills. Our minds naturally turn to what insulation we need as a way of reducing the impact of those bills, and our 'Energy Efficiency' section is packed with insightful and interesting articles such as that from the Energy Savings Trust. Insofar as solid wall insulation is concerned, there are many homes that could still benefit, but limited government funds to support it. The recent announcement from government that it plans to boost the Green Deal with a further £100m of incentives is welcome, but is seen as only a temporary solution to encouraging home energy efficiency. The stop-start incentives are not providing long-term confidence to the private sector and a more scaled-up investment programme is required.

Moving onto BIM, we were thrilled to be able to interview Malcolm Taylor, Head of Technical Information for Crossrail Ltd. In the interview he outlines what BIM means for this huge project and praises the BS: 1192 as it set the scene for BIM as we know it today. David Philp of the UK BIM Task Group also makes a welcome return with an article outlining how BIM can help industry to collaborate and deliver better outcomes.

This issue also contains a very informative article from Adam Dodgshon of the Planning and Advisory Service providing essential guidance for local authorities in their efforts to develop a local plan for housing need. Local authorities and developers would also be interested in an article from Noel Farrer of the Landscape Institute who argues that by considering effective landscaping within developments, not only are good places delivered, but they are valued and maintained, making them sustainable as well as profitable for all.

Comments and suggestions for future editions are always welcome, so please get in touch with the editorial team if you have any ideas. ■

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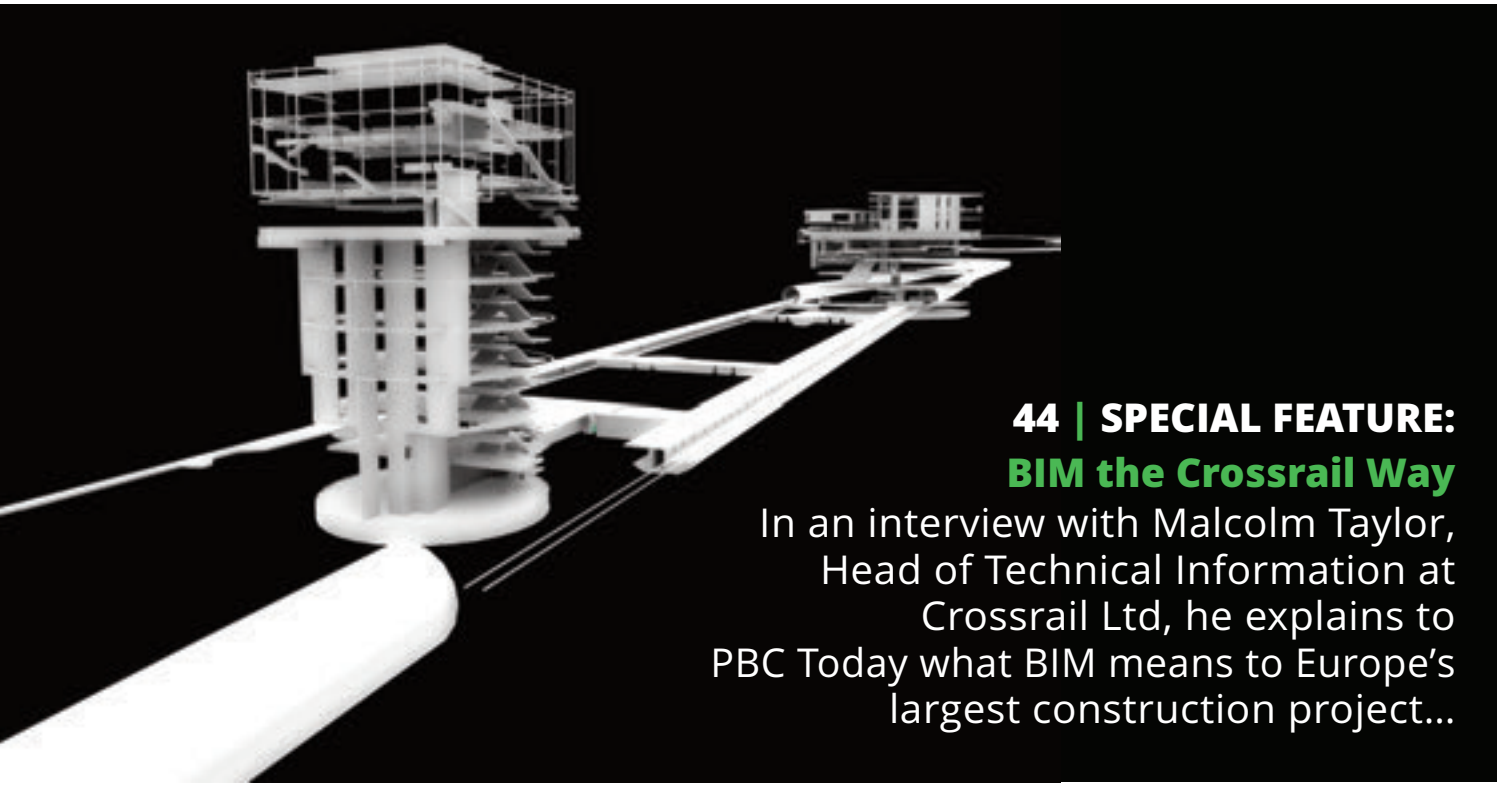

Building Control

Overview

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Inspiring Safe Construction

What is a twelve percent productivity increase worth to your project, along with 30 percent reductions in insurance premiums, around 30-70 percent reductions in undesired incidents, and significantly reduced operating costs for your company?

The behavioural approaches used to achieve these proven real world results have been implemented over the past five decades in a wide variety of work settings. In the UK, the HSE funded two construction research projects at UMIST in the late 1980's and early 1990's. The team dedicated to working on these projects included Professor Dominic Cooper (the author), Dr Tim Marsh, Robin Phillips, and others. The first sought to identify if a behavioural approach would work, and the second focused on industry implementations. Although both projects were successful, they highlighted the importance of people's commitment to making the process work for them.

As a young Sapper in the Royal Engineers, and later as an Advanced Scaffolder, the author knows the construction industry is very dangerous; the potential for an incident is always high as the environment changes hour by hour.

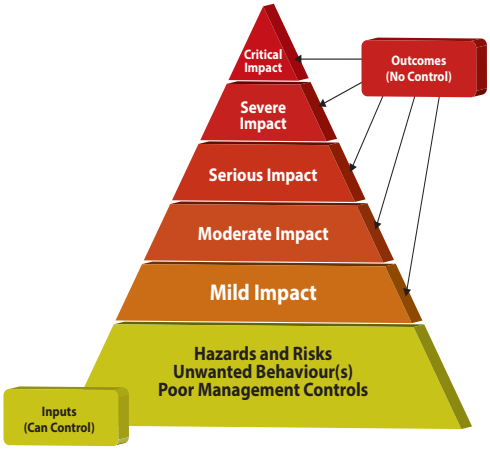
Like an army of ants, there are different trade people on site every day, undertaking different activities, with different materials, using different equipment according to a complex building program within a tightly specified time-schedule. People need to know what to expect from others around them, and know they can be relied on to work safely all of the time.

The opportunities for things to go wrong are immense. The key to success is for everyone on site to be engaged in a common purpose to control and improve safety. Everyone needs to identify and fix bottlenecks, and challenge unsafe behaviours within a mutually trusting and supportive atmosphere.

Equally applicable to safety, productivity, quality, environment, and waste management, the purpose of a behavioural approach is to reduce the number of incidents. These can be triggered by 'unwanted' behaviours, poor management controls, or hazards present in the environment; sometimes all three interact. If for example, a shuttering tie-bar is stuck in 'super-strength' concrete, and an unauthorised person uses an acetylene torch found lying around to cut it off while at a height, it could easily fall, hitting the building lower down and bouncing to breach any controlled access zones, and hit a member of the public. Not only could someone die, but this would cause project delays until the immediate aftermath was dealt with. Subsequent regulator investigations, court cases and fines, and increased insurance premiums would impact profits and competitive advantage.

Based on a true incident, the insertion of shuttering tied-rods in super-strength concrete without a protective barrier; the availability for use of an unsecured acetylene torch; and the cutting of the tie-rod at height without securing it, are all examples of unwanted behaviours.

Incident pyramids, such as that shown, illustrate that most incidents have a relatively mild impact, and that critical impacts are relatively infrequent events. It is a matter of chance, however, whether a mild impact event may have been more serious, as the severity of outcome cannot be controlled in the same way as the inputs at the base.



Preventative opportunities arise, therefore, from restricting unwanted behaviours, eliminating hazards, and tightening management controls at the base of the pyramid. By simultaneously focusing on all three, the possibility of a critical impact event is significantly reduced, while greatly improving performance and efficiencies.

Importantly, people's behavioural choices accounted for around 56% of all potential serious injuries and fatalities (SIFs), with poor management controls (e.g. job planning, poor quality rules & procedures), and physical hazards accounting for the remainder. Construction safety research shows that the bulk of activities involved in serious injuries and fatalities are:

- Working at Height
- Dropped Objects
- Mobile Machinery/Equipment
- Excavations
- Driving (Cars/Trucks)
- Electrical Lockout/Tag-out
- Use of Tools
- Chemical Exposure
- Tripping Hazards
- Chemical Handling

Behavioural Safety helps to proactively eliminate such injuries by focusing on people's behaviour.

Although there are a variety of behavioural approaches available, IDEAL processes all share the following components:

- Identifying unwanted behaviours
- Developing observation checklists
- Educating everyone. Telling & selling to all; training observers, facilitators, and champions.
- Assessing and monitoring actual behaviour via observations.
- Limitless feedback provided on results to all: verbal, graphical and written.

In practical terms there are two types of behavioural processes: one focused on groups of people, and one focused solely on individuals. Both have merit for improving safety behaviour and reducing incidents.

Recognising safety is a social activity, processes focused on workgroups (e.g. Scaffolders, Steel Fixers, Shuttering Carpenters, etc.), harness existing social dynamics to change group norms surrounding safety. One or more trained observers embedded within each workgroup monitor the behaviour of their colleagues during a single 10-20 minute observation, once a day. Verbal feedback is provided immediately if the observer is comfortable doing so. Analyses of the total workgroup observations for the entire week are discussed at weekly workgroup meetings (e.g. Toolbox talks).

To avoid observer fatigue, colleagues rotate into that role every so often; this way everyone becomes an observer. At the same time, the observation checklists are updated to ensure a focus on relevant safety behaviours. An administrator (tradesperson) and champion (senior site manager) are also required to help drive and guide the process.

Using this approach in the Middle East, the author helped one construction project achieve 121 million man-hours worked without a lost-time injury (out of 240 million hours worked), on the longest run, with 47,000 workers (at peak) from 64 countries. Nonetheless, with 1500 observers, it was labour intensive, although the time devoted to the project was less than 10% of the projects total lunch-break hours. For many site managers, the perceived high administrative, labour, and time costs are not worth the effort, and they desire something simpler but just as effective. This is where one-on-one, peer-to-peer observations come into their own.

Using observation cards that contain predetermined categories of activity (e.g. Access and Egress, Mechanical Lifting Operations, Body Positioning, etc.), and discussion categories of underlying contributors (e.g. Poor Job Planning, Ineffective Leadership, Poor Communications, Insufficient Manpower, etc.), trained people observe a behaviour during their normal daily duties, twice a week or so, and provide positive, on-the-spot feedback or coaching while discussing the underlying reasons for an unwanted behaviour. Carrying a checklist is unnecessary; although the observation and discussion is recorded in a software database (e.g. PEER®) after the interaction is complete via desktop computers or handheld devices.

The value of this latter process is the speed of roll-out and execution, as training is minimal (half-day classroom, half-day site practice), the reduced administrative burden, and the rapid impact on incident rates; one European site with an 800 person workforce achieved zero incidents within two weeks!

With both types of process, the data is analysed regularly (perhaps by the safety folks), and used to highlight strengths and areas of opportunity, with the results disseminated widely on site via toolbox talks, posters, etc. The observation data is also used to facilitate any corrective and preventative actions (e.g. remove hazardous materials, etc.), and the tracking of progress. Long term data trends are used to adapt either process to ensure their sustainability.

It is not uncommon for companies to simultaneously execute both behavioural processes; the first to involve trades people in safety via the workgroup approach, and the second to involve line-managers via the peer-to-peer approach as a way of them demonstrating their safety leadership.

This helps to create a safety partnership from a combination of management's safety leadership activities, and employee engagement in the safety effort. Developing this partnership is important as safety leadership can impact people's behaviour by as much as 86%, and engaged employees are 5 times less likely to be involved in an incident. In turn, this helps to ensure safe production is the number one priority.

Conclusion

Organisations good at managing safety also tend to manage operations well – in other words, operational and safety excellence go together. Behavioural processes are known to provide a return on investment of around £1million per 100 workers, per year, from incident reductions. Strong evidence also shows productivity improvements, reductions in insurance premiums, and reduced operating costs.

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The local development plan: Using the evidence

A local development plan that analyses housing need requires a sound evidence base. Using this evidence is key to progressing successfully and here, Adam Dodgshon, Principal Consultant at PAS provides essential guidance for local authorities...

The NPPF has been in place for over two years now. In truth, if you add in the initial consultation on the draft, it has been in peoples' consciousness for over three. This is enough time to get a plan in place. It's certainly enough time to consider the implications for a plan adopted pre-NPPF. Add to that the fact that much of the NPPF repeated existing policy, and you can see why many people scratch their heads at the lack of up-to-date plans around the country.

So, what's taking so long?

This article focuses on one of the main issues: Housing. Many other issues flow from it but this is perhaps the one where most time and resources are being spent at the moment. I'll leave you to decide if that's right.

It really isn't a simple issue. The NPPF contains some pretty big 'asks'. The main one, undoubtedly, is the requirement for local authorities to, and I quote, "use their evidence base to ensure that their local plan meets the full objectively assessed needs for market and affordable housing in the housing market area". I'll break this down in a minute, but we mustn't forget the rest of Paragraph 47's first bullet point: "as far as is consistent with the policies set out in this framework, including any key sites, which are critical to the delivery of the housing strategy over the plan period".

Here's a very brief history lesson. Local authorities have never had to work out their own housing number before. For some, the relationship with the upper tiers that decided this (be they the regional spatial strategies, or the county structure plans before them) was harmonious. They got what they wanted. For many, it was a fractious relationship. There was a lot of gnashing of teeth, a lot of moaning, and a lot of horse-trading. And there was someone else to blame.

Fast forward to the NPPF and what you have is no safety net. Councils – and perhaps, particularly – councillors, are now exposed. That pesky bullet point says 'use their evidence base'; so you have to understand where the numbers come from and what all the assumptions are. You can ask the question 'what happens if we decide to...?', but you are already muddying the pure waters of impartial and objective evidence.

For too many places, the housing number produced by the evidence is just too big. It doesn't feel right. Ask the residents if they think there's already enough housing in the area, more will say 'yes' than 'no'. Ask the country more generally, 'are you living in a dwelling that meets your needs now?' and many will answer 'no'. Follow it up with 'do you have access to the dwelling you feel you need?' and you will probably get a mouthful of whatever they are drinking spat at you, out of incredulity rather than disgust.

Having worked with local authorities since the NPPF came out, at PAS, we have been able to see a pretty clear consistent picture emerging. The problem is far less about whether the authority has the right evidence; it's far more about how they are using that evidence. What happens is it becomes a very

Adam Dodgshon, Principal Consultant

subjective piece of work. The most common question in the south is 'how can we make the number as low as possible?' The most common question in the north is 'what difference does the number make? No-one is building here anyway'. I am exaggerating (slightly) to make the point that the same problem has two distinct sides.

All the evidence points to uncomfortably high numbers. The reasons for the discomfort vary. There is the 'we are full/too nice a place to be able to take any more' brigade. Then there is the 'but we've never delivered numbers that high before; there just isn't the demand'. So, can we have a truly plan-led system to deal with this? The answer is (probably) 'yes, if we have a national plan'. But in terms of what local authorities can do, here are some of the key lessons PAS has learned (and are still learning).

Remember, planning is all about providing a balanced view. Involve people. Inform councillors. Have a proper debate. When people tell you 'it's all because of *X*', it never is. The local authority should be open about sharing evidence. You have a role in informing your communities about what you have to consider and how. Getting members involved is crucial. Often, these members talk about the pressure from their local communities. Balance that with the pressure to deliver. That pressure comes not from government, or evil developers, or even evil planning officers. It comes from the underlying evidence. Evidence which tells us there are many, many more people in need of a property than can access one.

Speak with developers and land owners early, and regularly. It's a very sad state of affairs that the default position seems to be 'oppose' from both sides. Developers seem all too ready to fight a lack of inclusion at an appeal or examination; all too ready to argue the numbers aren't high enough. The recent appeal decision at Blaby in Leicestershire is a case in point. The appellant managed to assess OAN at twice the number the authority had. This is a problem. Perhaps a regular dialogue can help. It certainly can't hurt.

Don't shirk the evidence. Once you know what it tells you, start to consider what this means for the area. If the numbers cannot be achieved, return to the evidence to understand why and make the case clearly and transparently. If you are 'full' (hint: no-one is), then the evidence will help you and your neighbours understand what you can achieve and how.

PAS can assist with supporting authorities on devising appropriate engagement plans, on gathering the right evidence and understanding it, and in reviewing your plans before you publish them to see if there is anything missing. ■

PAS
planning advisory service

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The Decline of Town Planning

Central Government has convinced itself that its ongoing changes to the Planning system will make it easier for small businesses to start up or expand. Yet in practice, the effects are quite the opposite – at least in London and the South-East, where relaxing controls allows market forces to favour housing to the exclusion of all other uses.

So far, the main beneficiaries appear to be the larger house-builders, supermarkets and any householders wishing to extend their houses. The system still bears down heavily on small businesses and owners of individual flats who want to extend or adapt their premises. In an age of 3D model-making, planning departments still insist on traditional drawn elevations and floor plans.

Economic Revival at Risk

One of the original aims of Town Planning was to ensure that a range of uses and amenities was provided within each district, reducing the need for long-distance travel, but this is becoming harder to achieve. Councils' powers to safeguard or nurture local employment are draining away.

Despite recent concessions allowing modest extensions to business premises, it's becoming harder for a successful business to find larger premises in the same neighbourhood. New residential development has supplanted most of it.

This is probably the greatest obstacle to nurturing the "hot-spots" for the cultural and creative industries that we need to revive our economy.

Efforts to reform the Use Classes for shop premises have been slow to recognise modern shopping patterns and fail to protect the amenity of the residents moving back into town centres. In the meantime helping shop-owners navigate the changing use class rules has kept some of us busy in recent years!

Safeguarding the Right Buildings

Councils need to be careful in their choice of which buildings to defend or promote in employment use, and which to let go.

There is a hangover of suburban 1960s office blocks with inadequate services that are probably the best candidates for conversion to flats. Large industrial sheds are only likely to attract new firms if they are close to main roads, for ease of deliveries.

Old urban warehouses and workshops can be the most attractive to creative enterprises and start-up businesses, if capable of being split into small workshop or studio units. Heritage or listed buildings are popular for clusters of small enterprises and for retail uses, aside from their potential to generate more footfall as a visitor attraction.

Building-in Employment Space

Well-meaning planning authorities have often insisted on some employment space being included in urban developments, particularly on old commercial or industrial sites, but it has been difficult to sustain in practice. Too often the space turns out to be unsuitable for the firms that want to use it, such as no provision for ventilation ducts from restaurants on urban street frontages, or poor access for delivery vehicles.

Recent proposals from DCLG threaten even this token provision by allowing most of it to change to more lucrative residential use.

Alan Piper

The Landlord's role

Councils are on surer ground where they still own key buildings themselves. Renting-out a surplus building, even on a temporary basis, will do more good than a hasty sale. Innovative councils are sharing buildings with other agencies, and letting surplus floor-space to social enterprises and small businesses.

But before you commit to this approach, has anybody checked that the building can cope with the new expectations? Can all the proposed activities fit within the space? Can access be improved while keeping sensitive areas secure? What major repairs are needed in the years ahead? Will the new uses need planning permission or other consents?

Even if you don't have the budget for a detailed study at present, maybe I could help you with a quick appraisal to see if your concept could work with the premises that you have?

Alan Piper Consultancy

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Trumpington Meadows,
South Cambridgeshire.
Species rich meadow

Image: © Terence O'Rourke

A landscape for investment

Good quality landscape design is the key to long-term profitable development as Noel Farrer, President, Landscape Institute explains...

We need 230,000 new homes every year to cope with predicted population growth in the UK. That's more homes than at any time since the post-war building boom. Or to put it another way: by 2050, the population is likely to reach 77 million – meaning to house that number, we need to build for the equivalent of another 11 areas the size of Bristol. With the government putting more pressure on housebuilders than ever to hit the numbers, will it be business-as-usual or will these schemes endure as successful, popular and valuable places to live? We cannot afford for them not to be.

People don't want to live in any old housing. They want to live in housing that offers them a better quality of life, one that makes them feel safe walking to and from work and creates a sense of pride and ownership. This was well understood by those housebuilders behind landmark developments such as Munstead Wood, Letchworth, Span estates, Milton Keynes and Greenwich Millenium Village. All of them are a combination of good-quality housing in verdant, well-designed and constructed landscapes, because it is the so-called 'spaces between the buildings' that make housing work.

Today, we have other notable examples, but whether they are reverential to these landmark developments or new typologies in themselves, they all aspire to the same maxim: landscape thinking delivers good places – and good places are valued and maintained, which makes them sustainable, as well as profitable for all. We've collected together five of these recent housing projects in a new guide – Profitable Places: Why housebuilders invest in landscape – that aims to show public and private developers how landscape can help them deliver their business goals.

Developed by the Landscape Institute Policy Committee Working Group on Housing, the guide offers housebuilders five ways in which landscape professionals can add value to their developments. These are:

- Investment in a high-quality landscape pays dividends, as customers are willing to pay more for it;

- Good landscape planning helps to make the best use of land, identifying the most sustainable sites for development;

- Well-planned and well-designed green infrastructure creates spaces that deliver more efficient land use;

- Landscape is a cost-effective way to meet the regulations and standards that guide sustainable development, such as Building for Life 12 – all but one of these national standards require a landscape-led approach to achieve a green light;

- Considering landscape from the outset can ensure that new development is more acceptable to existing communities, and will speed up the planning process.

But rather than just have our members tell house-builders how to do it, we started by putting the question to them. We asked senior executives at Berkeley Group, Barratt Developments, Countryside Properties, Homes and Communities Agency, Crest Nicholson, and the Greater London Authority to tell us how landscape adds value to what they do.

The guide includes comment from each of these developers, but one consistent message is that creating sustainable housing developments that pays dividends is not just about creating energy efficient homes. As Chris Tinker, Board Director and Regeneration Chairman at Crest Nicholson says, "We have learnt that to create places where people wish to live, and to add value for the new community, our shareholders and wider society alike, we should invest in the public realm and the natural environment from the outset."

It will come as no surprise that the most popular developments are frequently the greenest, leafiest ones, with mature trees and well-designed streets. Moreover, leading developers obviously use this to differentiate themselves by featuring these images prominently in their marketing materials. But is this message being understood and acted on all the way down the supply chain and all over the country? No it isn't.

That's why we believe this guide is necessary. As the Farrell Review of Architecture and the Built Environment 2014 pointed out: "Landscape architecture and urban design are often the most valued by the public, yet contradictorily the least valued in terms of fees and frequently where the first savings are made on any given project."

There is a growing evidence base, of which we highlight a number of key statistics and sources in the guide, that suggest this trend could be hurting rather than helping developers' bottom lines. In its 'The value of placemaking' report last year, property consultants Savills showed how investment in the public realm can potentially double average values of flats in parts of London. Defra and Natural England's 2013 report 'Green infrastructure's contribution to economic growth' suggests developers already know this, with many of them prepared to pay at least 3% more for land in close proximity to open space, and some putting that premium as high as 15-20%.

But that's if you get to build. The fact is that the public don't like housing developments that detract from, rather than add to, their neighbourhoods. A recent Local Government Association survey found that 61% of councillors in England and Wales said that public opposition is the most significant barrier to housing development. That same survey also provided the solution: asked what would make it more acceptable to the public, 81% of councillors said benefits for the community, such as schools, health services and green spaces.

It is worth mentioning some of the case studies from the guide to illustrate this point. Accordia housing scheme in Cambridge master-planned by landscape architects Grant Associates and architects FCBS incorporates more than three times the amount of green space of other housing developments in the area. Each home was designed to overlook one of these green spaces and each space is linked to the next via a network of footpaths and cycleways, pedestrian-friendly streets and subtle traffic-calming measures that create a safe, 20mph zone. It is a community landscape – and in 2008 it became the first residential scheme to win the RIBA Stirling Prize.

Continued on page 18...

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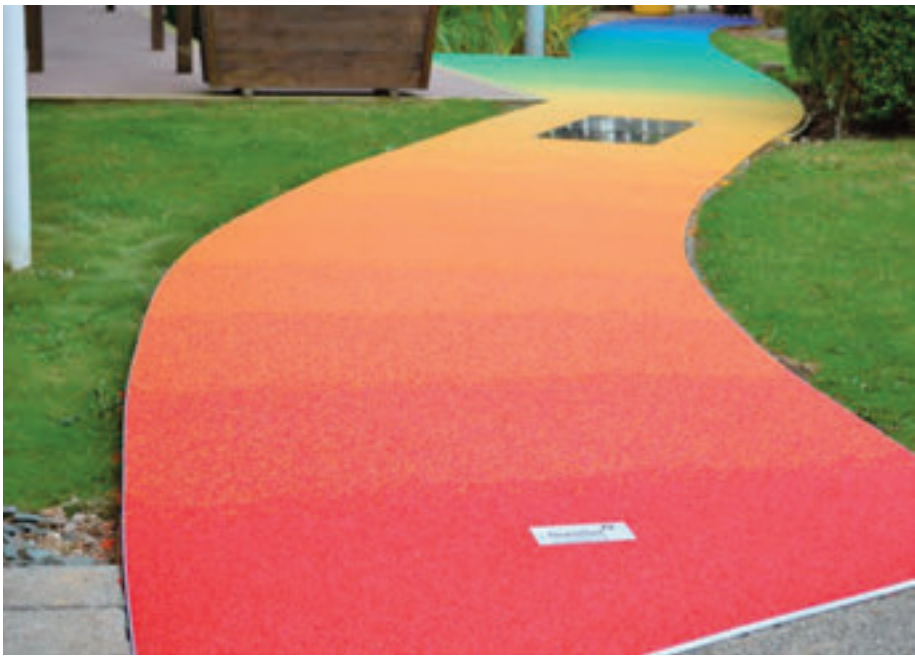

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Accordia, Cambridge, Brooklands Avenue, a forest Garden, Grant Associates

Continued from page 16...

Or how about Trumpington Meadows? Landscape architects Terence O'Rourke reconfigured the existing plans for this site to deliver almost twice as many homes as had been previously planned while improving the urban edge and green infrastructure framework. And because the developer was prepared to invest early in a country park, this has ensured that the species-rich meadow, native hedgerow planting, wetland areas and large parkland trees that have been established are likely to increase the value of adjacent housing parcels when they go on the market. Savills currently estimates an average increase of 10% has been achieved.

Existing residents in cities, towns and villages need to believe that new housing will enhance, not diminish, their quality of life and the value of their homes. Meaningful landscapes can increase property prices,

Image: © Robert Taylor

Noel Farrer
President, Landscape Institute, and
Director, Farrer Huxley Associates

but they also add capital and community value by creating socially dynamic spaces. And more often than not, this is the difference between those that endure and those that have to be knocked down and started again.

Profitable places: Why housebuilders invest in landscape is available to download at:
http://www.landscapeinstitute.org/policy/Housing.php

Profitable Places will be complemented by a guide on housing and landscape for local authority planners and planning committee members.

Landscape Institute
Inspiring great places

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The future of sustainable housing

Continuous improvements in terms of sustainable design and performance of new housing create benefits for people, the environment and the economy. Here BRE outline their new standard for new homes...

The recent Department for Communities & Local Government Housing Standards Review (HSR) saw proposed changes to the regulatory landscape, including the dissolution of the Code for Sustainable Homes and the incorporation of some of its elements into building regulations.

In the wake of the review, BRE took the decision to develop a voluntary sustainability standard for new homes. Going beyond minimum regulations, its purpose is to help ensure that housing being developed now is fit for the future.

Why a new standard?

BRE's objective for developing a new standard is to maintain the current momentum in the industry of continually improving the sustainable design and performance of new housing. It aims to drive innovation and improvements within the supply chain to support manufacturing jobs in innovative industries; contribute towards maintaining and enhancing the UK's reputation as a leader in sustainable design and construction; help British companies compete in export markets; and provide all-important assurance for consumers and investors.

The organisation is currently working with industry to achieve the right balance between simplicity and comprehensiveness, and to prevent a proliferation of standards. A first round of consultations to establish stakeholder views on the contents has been completed, with a second round to focus on getting views from the industry on its technical aspects. The proposal is that the new standard sits within the BREEAM family of schemes, with assessment and certification carried out independently by a third party, and governance by an independent stakeholder panel.

The New Homes Standard Lead Gwyn Roberts said: "Our remit at BRE has always been to fuel positive change in the built environment for the benefit of people, the environment and the economy. In the UK we spend a large proportion of our lives in buildings and we must continue to push for better sustainability and quality in our homes. If you look at any other sector such as automotive, IT and communications, they are continuously improving their products and there is no reason why housing should be any different. This new standard is designed to address the issues and challenges for future housing delivery and become one that people and industry want to use; a standard that provides increased quality and choice for the consumer and drives innovation and improvements across the housing supply chain."

Key principles

In a shift away from the Code for Sustainable Homes' top down approach where there is limited influence by the end user, the new standard puts occupiers at the centre.

Using an easy to understand, consumer-focused rating system, it is being developed for the UK markets and can be adapted for specific local circumstances. It will provide increased quality and choice for consumers by giving them the tools to compare the sustainability performance of different property

standards, as well as giving developers that want to go beyond minimum regulations an opportunity to differentiate their product in the marketplace.

"This new standard is designed to address the issues and challenges for future housing delivery and become one that people and industry want to use; a standard that provides increased quality and choice for the consumer and drives innovation and improvements across the housing supply chain."

A significant objective is to tackle the performance gap issue to ensure that a home is performing as designed, and if not, to recommend a course of action that the homeowner can take. It also focuses on helping with planning and Registered Social Landlord (RSL) funding; reducing operational and maintenance costs for owners/occupiers and providing greater cost predictability; and reducing build costs by scaling up new products and processes.

Reflecting critical challenges

The standard is designed to be a natural progression from the Code for Sustainable Homes. Whilst it embodies the Code's aims and elements, it has a new emphasis to reflect current and future issues and challenges, namely:

- **Predictable operating costs –** Current fuel bills for average UK households are in excess of £1200 and 18% of homes are in fuel poverty. With fuel costs continuing to rise, a vital focus is on low energy, low water usage and low maintenance homes where operating costs are far more predictable. This will be a key factor for mortgage lenders' affordability evaluations and could also lead to tax breaks and other financial benefits.

- **Mental and physical health and wellbeing –** Homes are where people spend a substantial part of their lives, so they have a significant role to play in occupants' physical and mental health and wellbeing, such as through air quality, ventilation, lighting, comfort, heating and safety. Nature has a significant role to play in enhancing the environment as well as people's lives and with biodiversity, also contributing to flooding and overheating resilience.

- **Resource impact –** Considerable progress has been made to drive down the embodied energy of construction materials and products through the Code for Sustainable Homes and there remains a strong will amongst industry to continue to make these improvements. With the construction industry the biggest contributor to landfill waste, reducing waste levels is also on the agenda.

- **Future Proofing & Resilience –** with far more frequent incidences of adverse and extreme weather such as the flooding in the UK earlier this year, homes and communities need to be able to withstand extremes like these. Also improved connectivity, movement and flexibility are becoming increasingly important factors as the UKs demographic patterns shift – changing work models and global accessibility make these factors more important than ever.

"The built environment faces a number of significant challenges that we have to address," said Gwyn Roberts "and there is a need to push beyond minimum requirements so that the house-building industry continues to move forward and innovate. The best way to do this is by having a defined standard."

Development of the standard will be completed in March 2015, with a formal launch planned at Ecobuild. ■

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The art of mentoring

Sandi Rhys Jones OBE, of Rhys Jones Consulting and head of the Association of Women in Property's Mentoring Programme highlights the benefits of their successful mentoring partnership...

Many organisations don't get mentoring quite right. It isn't just a case of bringing together an employee with a more senior member of staff on the assumption that some of that experience might rub off, although this is not in any way to criticise the invaluable benefit of experience. Mentoring differs from many standard training and development programmes, which focus on improving specific competences or attributes, such as personal effectiveness, assertiveness and so on. Mentoring takes a broader and deeper approach, helping an individual to analyse for themselves the direction they wish to take and identify what they need to do to achieve it.

A mentor is an informed, objective and supportive person, who should be outside the mentee's immediate workplace, someone who can help identify career goals and offer impartial guidance.

Women in Property's (WiP) scheme is based on role model mentoring and, while the mentor will generally be more experienced than the mentee, they might not necessarily be significantly more senior. Probably one of the key distinctions of the WiP system is that we not only go outside an individual's company to match mentor with mentee, we deliberately cross disciplines too. So, while an individual will be matched with someone from the built environment sector, a planner won't necessarily be placed with a planner but possibly with an architect, surveyor or lawyer. In this way both the mentor and mentee will be free of any pre-conceived ideas related to a mutual discipline and instead have the freedom to adopt a more impartial approach.

Moreover, we feel strongly that the property and built environment sector benefits from improving understanding and communication across the

Sandi Rhys Jones OBE
Head of Mentoring Programme

disciplines – helping to reduce the tendency for silo thinking and encourage a more constructive approach to team working.

We operate a matching system, which requires our members to complete an application form giving details of career, skills and specialisms. Those who wish to be a mentee are asked to note down any particular issues on which they would like guidance. Building a resource bank of mentors and mentees allows us to bring together people whom we believe will be able to develop an effective and rewarding mentoring relationship.

Let's rewind a bit. Before any successful mentoring partnership can be embarked upon, the mentee must have some idea of what it is they are trying to achieve, whether it be a promotion at work, identifying opportunities or maybe a change of career direction. Armed with these objectives, the mentee and mentor agree how they wish to proceed – a critical part of the process which needs to receive buy-in from both at the earliest stage.

WiP runs mentoring training sessions for potential mentors and mentees. Experience shows that by clarifying the responsibilities of both, and by demonstrating how to develop communication skills, the training helps to build effective mentoring relationships. Over a period of two or three hours we outline how the process works, what's involved for both parties, how to set the parameters, how to go about setting objectives and so on. By encouraging interaction amongst the group, the training also helps us in the important process of matching.

Ultimately, the entire relationship is underpinned with a high degree of trust and mutual respect. The mentor helps the mentee to become what they aspire to be by passing on knowledge and skills, talking about their career, acting as a sounding board and showing them the ropes. This might all sound rather one-sided but, in our experience, the mentor can benefit as much as the mentee. Many mentors talk about the value of refreshing their own experience and knowledge and also gaining an understanding of younger/other viewpoints and skills. All this and of course the satisfaction of helping a fellow professional realise their potential.

Jean Dent OBE FRICS, formerly Director of City Development at Leeds City Council and now Chairman of the Audit Committee at Leeds Beckett University, is a great advocate of the WiP mentoring programme. She has been mentor to a member of WiP's Northern Scotland branch and said: "The pleasure of being a mentor is not only seeing someone develop but also the learning experience you have yourself.

"I think that it is crucial for people in senior positions within our industry to understand the challenges younger people face in terms of career progression, work experience and work life balance and what better way to understand that in depth, than to become a mentor." ■

Sandi Rhys Jones OBE
Head of Mentoring Programme
Association of Women in Property
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Womenomics – Think pink and fill the construction skills gap

Louise Murphy of The Construction Equipment Association highlights the efforts of their Skills Advisory Panel in addressing the sector's skills gap...

As an industry we cannot survive and prosper by only employing men; we must widen our net – at the sharp end of the industry a female employee is a rarity – women can fill the constructions skills gap and we need to be actively attracting more young women into our industry along with schools and colleges.

Nick Ground, MD of GKD Technik is confident that women can be every bit as successful as their male counterparts in the construction equipment industry – but only if more are actively encouraged to look seriously at it.

Nick said: "When I was an apprentice, over 30 years ago, I trained alongside the first female apprentice at Marconi who became a very successful engineer. It is a poor reflection on our industry that we still struggle to attract and retain women."

Dr Carol Marsh, President of the Women's Engineering Society (WES) mirrored Nick's comments, she said: "There is a skills shortage in engineering and one way to plug the gap is to get girls interested in engineering. Girls are good at maths and science at primary school but don't pursue these subjects.

As an industry we need to promote the creative side of engineering, the range of careers available, the opportunities for travel and the salaries.

We must inspire girls and boys to consider engineering as a career. Engineering companies must engage with children in primary schools then keep them engaged throughout secondary school. The routes into engineering need to be highlighted: Apprenticeships, Year in Industry, graduates. More importantly we need to keep engineers engaged through family friendly working policies."

Dr Marsh concluded: "There is no one single answer but we must act now to secure the future of engineering in the UK."

Launched at its recent national conference on innovation and engineering, the Construction Equipment Association's Skills Advisory Panel aims to make a difference in the skills challenge on behalf of its sector – this includes encouraging more women/girls into the sector. The Panel has been set up by the CEA Board as a priority in response to key findings and recommendations from two studies commissioned by the CEA – one, a mapping exercise of the Association's current relationships across the sector; and the other the first detailed construction equipment industry's sector report in a decade. It will advise on courses of action necessary to reduce the perceived skills gap in the sector.

Identifying the skills gaps

Rob Oliver, CEO, CEA said, "Investment in the skills agenda for this sector is clearly needed. The sector study report shows that the off-road sector is the second largest within the UK's automotive industry and is close to, or already exceeding pre-recession levels with estimated total revenue in 2013 of £11bn. It also tells us that while companies are seeking to continue to hire people, skills requirements are different to those of pre-recession times."

Jacqui Miller MBE, main board director/adviser to Miller International is a familiar face, well known

throughout the international construction and quarrying industry and a perfect example of how women can succeed and indeed fly high in the construction industry. As a committed, determined and inspiring businesswoman, Jacqui takes her responsibilities to the business and its brand very seriously. Indeed, she takes pleasure in offering assistance where she can to other business in an effort to 'give back', which she also feels is very important in life. Jacqui was recognised with an MBE for services to industry and international trade in the 2013 New Year Honours List, short listed for woman of the year in manufacturing in the first women's awards, and won international business woman of the year for North East England all in the same year.

Ms Miller was instrumental in changing how excavators are now used on site every day, not only in the UK, but across most western markets. In addition, she is still involved in an advisory role in the very difficult process of planting the seed of change and changing the mind-sets of other more complicated markets like India, China and Indonesia to name but a few.

Ms Miller said: "I'm a huge believer in youth opportunities for boys and girls, and being one of the sector's trailblazers in direct sales and marketing I would dearly like to see lots more young women get involved in all aspects of our industry. The talent is out there, what we must do is to encourage these young ladies to consider our sector as a real opportunity for a fulfilling career.

"At Miller we think it's exceptionally important to encourage young people for the future as loyal employees with the aim that the most talented amongst these individuals have the opportunity to go on and become the next managers/stars within our business. It also should be part of a business's social responsibility toward the future prosperity of manufacturing within the construction and associated industry sector."

Ms Miller concluded: "I think as part of a broader agenda we need to actively engage more with the schools, universities and colleges nationwide and get these educational bodies 'promoting' the opportunities for the 'future stars' to look at our sector. Use industry's success stories by way of inspiration and maybe produce a DVD that can be viewed by these youngsters via multimedia, in the class room etc. If we in business don't promote our respective businesses as real long-term career prospects offering the talent of the future an exciting, creative and fulfilling job opportunity, then who will?"

JCB has recently reported a record number of young women joining as apprentices – which is excellent news. Nine females have just started their apprenticeships, which is almost double last year's intake.

They have been recruited as part of the company's Young Talent initiative which attracted more than 1,000 applications for more than 100 new jobs for apprentices, graduates and undergraduates. A total of 59 of the new positions are for apprentices.

Since its introduction three years ago, JCB's Young Talent programme has seen almost 350 young people join the business. The latest recruitment drive comes after Lord Bamford underlined his commitment to "identifying and nurturing young talent" in his maiden speech in the House of Lords.

This year also marks the 50th anniversary of the launch of JCB's first ever apprenticeship programme – when every single recruit was a boy.

Group HR Director Alan Thomson said: "We are delighted that more and more young women seem to be recognising that engineering and engineering companies represent an exciting opportunity for a rewarding and exciting career.

"When JCB's Young Talent programme first started in 2012, there was a solitary female amongst the apprentice intake. To have nine female apprentices this year is fantastic, and we are hopeful it could mean that the tide is finally beginning to turn and that women don't view engineering as very much a man's world.

"We have been very busy attending Women in Engineering events and visiting schools to encourage

young women to get involved and the hard work is paying off. We need people who can be innovative and creative, who can think for themselves and come up with the right solutions to problems whether they are male or female. We are delighted that more and more young women are choosing to apply for apprenticeships at JCB."

Amy Harris, aged 18, of Kidsgrove, is a Higher Apprentice Engineer. She said: "My dad and my uncle are both engineers and I decided I wanted to get out into the world and do something different rather than going to university.

"A lot of girls shy away from things like engineering because they think it's mainly for lads and they are a bit intimidated by it but that doesn't worry me at all. I think it's great that JCB are going out of their way to encourage more females to apply for apprenticeships."

Georgia Thorley, 18, of Cheadle, has also joined JCB as a Higher Apprentice Engineer and admits that the subject has always fascinated her. She said:

"I'm not bothered about being a girl in a male dominated world, I just take it in my stride. All my friends and family have been very supportive of my decision and I would recommend a JCB apprenticeship 100 per cent."

Abigail Hodgson, of Rugeley, is another new female JCB recruit, although her choice was to sign-up as a Higher Apprentice in Business. Abigail enjoyed business studies at school and decided to apply to JCB after seeing the help and support given to her older brother Ben during his apprenticeship with the company.

She said: "I have just been given my first placement in the Technical Publications department at the JCB World Parts Centre and I'm really excited about it. I'll spend six months there and then move on to another placement somewhere else within JCB. That's the great thing about the JCB apprenticeship scheme – there are just so many interesting things to get involved in."

Heidi Perry is a 2nd year apprentice at the Finning academy and is based at Finning Peterborough. Heidi applied in the first instance for a desk job in parts distribution just to get a foot in the door. She now has her own Finning van and is on the road with the other engineers. Being in such a male dominated environment does not faze Heidi in the slightest either; "What you see is what you get with blokes." She said. "If they like you they like you if they don't they don't. They treat me here as an equal – one of the boys.

Also, girls tend to have smaller hands so a lot of engineering work is easier for me. Most girls think this is a man's job – it really isn't – we definitely need to get more girls involved."

Heidi has also been busy being a 'female ambassador' for Finning and has made a video for Women in Engineering – you can watch it here http://www.finning.co.uk/careers_and_training/apprentice/ .

So the message is clear from apprentices on the ground up to senior level leaders that a lot more needs to done to encourage more young adults, both male and female into the construction equipment industry. It's the responsibility of employers, schools and colleges to bridge the construction skills gap – what are you waiting for? ■

Louise Murphy
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The National Sewerage Association

Setting the standards

The Association has been in existence in some form since 1981 when the Association of CCTV Surveyors was inaugurated by fledgling companies to break what was perceived as a monopoly by the 2 UK pioneer companies. The name change occurred when flow survey companies joined in 1996; this allowed for companies in associated disciplines to gain admission.

We regard the maintenance of standards to be of paramount concern to safeguard the good name and continuance of an industry for which we have worked hard. Good health and safety practices, sound workmanship and employment practices, ongoing operator training, good customer service and sound common sense are expected of our members.

Our members operate in specialist drain and sewer maintenance areas carrying out works such as cctv inspections of drains, sewers and culverts, flow monitoring, manhole surveys, cleaning and descaling, blockage clearance, small diameter pipe replacement/refurbishment and minor civil engineering works.

Many member companies have grown over the years and are now considered to be among the larger companies in their respective fields, while some have been acquired by larger companies and have been re-organised to meet the changing market place and others chose to remain small to serve local needs.

Manufacturers and suppliers have also supported us with their membership over the years and we have been able to work in partnership to the benefit of all.

The Association continues to meet its established objective, among which are:

To act as a forum for closer working relationship between manufacturers, contractors and designers in ensuring that technological development and improved contracting services go hand in hand with common commercial interest.

Customer needs and service standards in performance, financial, quality and safety terms are identified and guidance on their achievement given on request.

Audit procedures have been established to ensure that members comply with the standards set and to deal with any non-compliance. A service is also provided for arbitration, conciliation and expert witness advice.

The development and promotion of appropriate training programmes whether in association with Develop, the Water Companies or EU Skills in order to set operative training standards, to accredit those achieving these requirements and to ensure that these standards are upheld.

We have had substantial input into the publication of The Manual of Sewer Defect Classification – Fifth Edition (WRc) and the new apprenticeship scheme for drainage operators (EU Skills) in the recent past.

Discussions are ongoing regarding future training needs within the CCTV inspection industry.

The Association lobbies and liaises with those bodies that can influence members' interests, is represented on several Standards committees and seeks to achieve National and International recognition. It also acts as a focus for external enquiry for the industry and the general public.

The Association provides editorials on a wide range of membership interest subjects to several trade publications and we give support to the Drain Trader who provide information and a voice for the smaller specialist companies in the field.

Further details can be obtained from the Secretary at 42 Manor Drive North, New Malden, Surrey KT3 5NY (Tel: 0208 330 0123), email: nsa@sewerage.org or visit our website, www.sewerage.org.

National Sewerage Association

The National Sewerage Association
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Behavioural Safety Past, Present & Future

Paul Bizzell, Operations Director at Ryder Marsh Safety Limited, explains the background to Behavioural Safety and briefs on current thinking about Safety Culture...

The actual origin of the term Behaviour Based Safety (BBS) is variously attributed to a number of psychologists. What is clear is that several people were working in the field of understanding the relationship between risk taking behaviours linked to accidents from the 1970's onwards. Their work built on the publications of Heinrich [1] and Lewin [2] as far back as the 1930's. There was a flurry of publications in the mid to late 1990's by several key names in the field in the USA [3-6]. Simultaneously the original research on Behavioural Safety, in the UK was undertaken at UMIST in the 1990's by a team including Professor Dominic Cooper, Dr Tim Marsh and others. Dr Marsh founded Ryder Marsh Safety Limited in 1997 and the company has become established as a leader in the field in the UK with implementations worldwide.

1990-2005

Initially the most common question encountered was simply "What is it?" A brief explanation that it identifies the motivation for risk taking and suggests changes to the working environment to change behaviours; or that is was about the psychology of industrial safety would usually be a good start.

2005-2010

Whilst a small number of professional practitioners developed a body of good practice and BBS gained popularity the term was often adopted and misapplied by others to any and every attempt to enforce rules without any understanding of the underlying science and psychology. When implemented in the style of "I've told you the rules, now BEHAVE!" it just reinforces outmoded management styles and creates or perpetuates a blame culture. Quite rightly the unions in the US and UK condemned poorly implemented BBS initiatives and Unite lead a campaign under the banner "Beware Behavioural Safety" [7].

2008-2014

Perhaps as a result of this or maybe just out of a desire to adopt best practice from about 2008 onwards, as organisations had either implemented some form of BBS or at least considered an implementation the more common question became "How do we do BBS well?" There was a great deal of interest in benchmarking and comparing initiatives evident both in dialogue with our customers and papers being presented at relevant conferences. In many ways, of course, this evolution follows a similar pattern to the way Quality Systems and "classic" health and safety management systems emerged and matured in the latter decades of the 20th Century.

A well designed BBS implementation embraces the principles laid out in the core literature in the references. That is, it's based on scientific principles of data collection, analysis, hypothesis/design of change, implementation of change to environment or procedures, collecting new data and testing that the designed solution actually works (all of which needs to be done with proper engagement and input from the workforce in an environment that is seen as fair and consistent). The guiding principle when implementing a good BBS system is to remember that if you can make the safe way easy for the person doing the work then why would anyone not do it that way? Contrast that with the traditional approach to compliance which identifies a risk and then imposes "control measures" that often impose an additional burden of effort, training, concentration and time.

2014 onwards

In the last couple of years, again possibly in the light of the adverse press generated by poorly designed and heavy handed implementations, the emerging question is very much "What comes after BBS?"

The answer is a more holistic approach covering the all elements of a safety culture rather than just behaviour. This approach, Cultural Safety™, addresses the four main components of a Safety Culture.

They are Beliefs, Behaviours/Rituals, Language and Artefacts/equipment. Sociologists and Anthropologists would say that any significant difference in any single area indicates a different culture. The advantage of taking a cultural approach is that as well as the behaviours (Rituals) we also look at the things that have the most significant effect on behaviours so we are dealing with root causes and not just symptoms. Once established, a cultural solution will be much more deeply embedded and long lasting whilst many changes to behaviour can be

quite temporary and revert once a short-term stimulus ends.

There are established tools to assess the relative strength and development of each element. By undertaking a Safety Culture survey an individual organisation's relative strengths and weaknesses can be established and a programme developed to bolster the least developed. Rather than simply focussing on worker behaviour this often shows up fundamental weaknesses in areas such as Leadership & management, values, processes, contract terms and other systemic flaws which left unaddressed create massive inefficiencies in an organisation never mind the risks to safety.

Since many of the tools used in the data collection, analysis and change management parts of a Cultural Safety™ implementation are also used in other process improvement methodologies it is often possible to align with initiatives traditionally aimed solely at efficiency, such as Lean and Six Sigma, which leverages previous investments. The advantage of approaching process improvement from the Cultural Safety™ angle is that making processes safe and easy at the same time both reduces risk and improves productivity.

Current thinking on safety culture is best summed up in the recently published book by Dr Tim Marsh[8].

[1] Heinrich, H. W. (1931). Industrial accident prevention: a scientific approach. McGraw-Hill.

[2] Lewin K (1936) Principles of Topological Psychology Read Books

[3] McSween, T.E. (1995) The Values-Based Safety Process: Improving Your Safety Culture with a Behavioral Approach. Van Nostrand Reinhold. New York.

[4] Geller, E.S. (1996) Working Safe: How to Help People Actively Care for Health and Safety

[5] Peterson, D. (1996) Analyzing Safety System effectiveness NY: Van Nostrand Reinhold

[6] Krause, T.R. (1997) The Behavior-Based Safety Process: Managing Involvement for an Injury-Free Culture.

[7] http://www.unitetheunion.org/uploaded/documents/Beware%20Behavioural%20Safety%20(Unite%20leaflet)11-4843.pdf

[8] Marsh, T. (2014) Total Safety Culture: Organisational Risk literacy Ryder Marsh Safety Limited

Author: Paul Bizzell, Operations Director.
Ryder Marsh Safety Limited

Local links for the statutory Register of Architects

ARB's Interim Registrar and Chief Executive, Karen Holmes, explains how they are working with local authorities to raise awareness of the statutory Register of Architects...

The Architects Registration Board (ARB) is the UK's statutory regulator of architects; its responsibilities are set out under the 1997 Architects Act. It is an independent public interest body and its work in regulating architects ensures that good standards within the profession are consistently maintained for the benefit of the public and professionals alike. ARB's responsibilities cover the following areas:

- Keeping the UK Register of Architects;
- Prescribing, or 'recognising' qualifications needed to become an architect;
- Ensuring that architects meet our standards for conduct and practice;
- Investigating complaints about an architect's conduct or competence;
- Making sure that only people on the Register offer their services as an architect; and
- Acting as the UK's Competent Authority for architects.

How can we work together?

ARB is currently working with a number of stakeholders to raise awareness that architects are regulated. 'Architect' is a protected title under UK law and for an individual to call themselves an architect, they must be registered with ARB. Architects have to undertake recognised qualifications to ensure they meet the criteria to be registered. The message for consumers is – individuals who say that they provide architectural

services or architectural consultancy may not be registered and may therefore not have the same level of skills and experience. The quickest and easiest thing to do is check the register of architects – www.architects-register.org.uk .

Local authorities are becoming increasingly important partners in our work to raise awareness of the Register. Councils are committed to supporting their residents, and by working with us to raise awareness of the Register, local authorities can assist in facilitating the public in making an informed choice. A recent project has seen a number of local planning offices adding links to the Register on their websites. This project has proved particularly successful, generating 3500 hits to ARB's website.

Brent Council and Peterborough City Council have both designed these links especially well:

http://www.brent.gov.uk/services-for-residents/planning-and-building-control/

http://www.peterborough.gov.uk/planning_and_building/planning_permission/apply_for_planning_permission/choosing_a_construction_profes.aspx

If you would like to add the ARB link to your website, please feel free to get in touch: http://www.arb.org.uk/contact-us

How does ARB support the consumer?
Those of you working in planning and building control are on occasion asked by consumers for information about how to locate trusted service providers. We recognise that many local authorities have policies not to recommend individual traders. In cases where members of the public are looking for an architect, these enquiries can be referred to ARB. ARB maintains the statutory Register of Architects, which is a public Register. Members of the public can use the online Register to check whether someone is registered, or search for an architect in their area. Similarly, if local authorities become aware that someone is using the title 'architect' when they are not on the Register, ARBs Professional Standards team can investigate and take the appropriate steps.

The online Register can be viewed at the following link www.architects-register.org.uk

What are the benefits of using an architect from ARB's Register?
For a member of the public, there are three principle benefits of using an architect from ARB's Register:

- **Education and training –** Architects must undertake recognised qualifications, covering all building stages from conception to completion;
- **Professional indemnity insurance –** Practising architects are expected to hold adequate and appropriate insurance to cover any claims against them;
- **Professional conduct and competence –** Architects are required to act in accordance with the Architects Code which sets out standards of professional conduct and practice. The ARB provides a mechanism for dealing with allegations of unacceptable professional conduct and serious professional incompetence against architects.

Karen Holmes, Interim Registrar and Chief Executive

We are very keen to support those working in the planning and construction sectors, and are delighted that PBC Today are taking this proactive step to inform their readers about the role of the Architects Registration Board and how we can help. ■

Architects Registration Board

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Smarter Printing for Construction

By Rob Brown, OKI Business Manager for managed document services

The construction industry was hit hard by the recession as housing activity slumped and building projects were cancelled. Recent months have seen a recovery but as construction businesses emerge from the downturn, many are uncertain what approach to take to printing.

Construction companies need accessible printing that is dependable and of high graphical quality. Yet, many such firms remain reluctant to make large investments in new solutions. Instead they often just struggle on, wasting money through inefficient processes and ageing printers.

The construction sector would benefit from a third approach, which involves buying printing as a service which develops with their business. Managed print services is often the ideal solution here.

That is because, instead of requiring them to make an upfront investment in the latest technology, it enables them to buy printers, supplies, maintenance and support in one all-inclusive ongoing contract as operational rather than capital expenditure. And these are exactly the kinds of benefits that OKI can deliver to construction sector businesses through its managed print services and associated managed page solutions.

An OKI managed print services implementation typically begins with an audit of existing practices including output volumes and printing types. By gaining a transparent view across the print landscape, a business can see where budget is spent and where it is potentially being wasted.

The results will be used to design a long-term print solution tailored to the needs of that organisation, helping ensure that the right printers are being used for the right job.

This approach also establishes best practices such as setting double-sided and mono printing as default options to save costs and drive energy efficiencies. In addition, it means just one contract for all printing and documents needs. This makes it easier to monitor on-going costs, reduce capital investment and control budgets.

For businesses that need more granular control, OKI offers a comprehensive managed page services approach. This involves OKI working with its customer to establish their print and document requirements; recommending the right printing device and delivering a tailored all-inclusive printing plan that covers all consumables and servicing, thereby improving productivity. The right device together with the right printing plan and the implementation of print policies will ensure the company pays a flat monthly fee for what it prints, so it can control its costs.

Of course, in implementing such an approach, vendors need to provide printing solutions that drive added value for their construction sector clients. The new OKI C931 A3 colour printer is one such solution, delivering the outstanding print quality that construction sector businesses need to print maps, plans and diagrams while pushing the boundaries of media flexibility.

What many construction businesses are looking for today is an approach that allows them to manage and control their spending on printing while enabling them to unleash their creativity with outstanding print quality and superior media flexibility. And that is exactly what OKI's services and solutions for the sector enable them to do.

For further information about OKI's products and services, please visit the OKI website, http://cleverprinters.co.uk/ .

smart
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Rob Brown
Business Manager
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The OKI C931 is your perfect partner ensuring you never miss the finest of details. The C931 can also be used as an office printer for day to day printing, eliminating the need for two separate printers for your office and detail drawing requirements.

Offering true flexibility for office or on site environments with paper handling capability from A6 to SRA3 and banner lengths up to 1.3m for essential signage. The OKI can print on a wide range of media including gloss paper, film, transfer paper, waterproof/ tearproof paper and more!

For more information visit **www.cleverprinters.co.uk**

Specification	**OKI C931**
Description	Four (CMYK) colour
Print speed	A4: 50ppm colour, 50ppm mono; A3: 28ppm colour, 28ppm mono
Print resolution	ProQ2400 Multi-Level technology, 1200 x 1200dpi
Paper capacity	Standard 530 + 300 sheets, additional trays up to 2,950 sheets
Memory RAM	Standard: 2GB; Maximum: 2GB
Hard Disk Drive	Optional: 160GB
Paper sizes/weight	SRA3 to B5; Custom banner up to 1321mm and weights up to 360gsm

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Print Smart. Print OKI

A robust approach to asset management

David Pocock from the Management Panel at the Institution of Civil Engineers (ICE) details why a step change is needed in the way infrastructure assets are managed...

The UK has extensive and sophisticated infrastructure that has been developed over hundreds of years. Because of this, unsurprisingly, a large proportion of it is nearing the end of its projected operational lifespan. The reality however is that our economic infrastructure assets are very rarely decommissioned at the end of their predetermined lifetime and must continue to perform and operate – supporting society and the economy and the changing demands placed on them through factors such as population growth. It is vital therefore, that these assets are managed properly throughout their entire lifetime and not just repaired or upgraded once a problem occurs or presents itself – as is often the case for strategic assets such as roads, rail and water systems.

This reactive approach can result in major disruption to the network, affecting society and the economy. It also means that asset managers are often asked to look after critical infrastructure with little available information about the asset, and, there are short-term budgetary restrictions due to the more reactive repair and upgrade culture. In these conditions there may not be sufficient opportunity to assess options, let alone the longer term risks associated with the chosen strategy or the future costs associated with such a choice.

A step change is needed in the way we manage our infrastructure assets through their life time. "Asset management" considers assets over their entire lifetime. It incorporates the comprehensive management of an asset from initial demand identification through planning and design to procurement, construction, commissioning, operation, maintenance, enhancement/rehabilitation and finally to decommissioning, or renewal and re-commissioning, in order

to optimise the whole-life return on investment from both capital and operational expenditure perspectives.

Asset management principles and philosophy serve as a good basis for delivering a consistent, robust approach – and I believe should be understood and wholeheartedly implemented at all levels by organisations – commissioning bodies, delivery/service providers, and professional bodies - and individuals.

Our former President, Professor Barry Clarke, described asset management and its benefits very succinctly: "Asset Management creates this holistic focus, viewing our economic infrastructure over its entire lifecycle, and provides the basis for a coordinated and coherent approach. It also ensures our essential infrastructure receives appropriate investment and attention, has the appropriate resilience to meet new challenges and can sustain our economic prosperity."

Encouragingly, the government's National Infrastructure Plan appears to agree with that approach – highlighting the necessity for strong, coordinated and strategic investment in the UK's essential infrastructure. The plan aims to ensure that the most is made of any new infrastructure, and rightly also prioritises the maintenance and smarter use of existing assets.

There are published techniques to assess the efficiency of asset management systems adopted by individuals and organisations and compare these with existing best practice. One such tool is the PAS 55 standard, which was created by the Institute of Asset Management to provide objectivity across significant aspects of good asset management from lifecycle strategy to everyday maintenance. It enables the integration of all aspects of the asset lifecycle – from the first recognition of need continuing through to design, acquisition, construction, commissioning, utilisation or operation, maintenance, renewal, modification and/or ultimate disposal. This is further emphasised through the recent publication of the international standard ISO-55000.

At ICE, we know we too have a role to play in developing and promoting best practice for the management of infrastructure assets throughout the civil engineering profession – after all it is civil engineers who, right across the world, play a pivotal part in developing, operating, and maintaining the economic infrastructure networks we use on a daily basis.

Our Management Panel, a joint initiative with the Chartered Institute of Civil Engineering Surveyors (CICES) recently created the "Guiding Principles of Asset Management", which has been well received by the industry. The report aims to develop the knowledge and understanding of the factors and processes affecting assets throughout their lifetime. It also identifies the key principles to ensure civil infrastructure is kept at the forefront of advancement, benefitting our membership, the engineering profession and the public as a whole.

The Institution has also produced a paper entitled "Leveraging the Relationship between BIM and Asset Management" which importantly, explains the mutually supportive relationship between Building Information Modelling (BIM) and asset management. They should not be isolated practices, they must be considered together to realise the full benefits.

ICE will continue its work in this area to promote better understanding of asset management. We will also continue to engage with the Government, industry and other professional bodies to ensure the engineering community has the foundation necessary to develop a coordinated and strategic vision for managing infrastructure assets within the UK and abroad. ■

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The Energy Centre at Kings Yard on the Olympic site is a District Energy scheme

The district energy renaissance

As the uptake of district energy rises, more urban areas can future-proof their energy systems. However, challenges do remain as explained by Simon Woodward, Chairman at The UK District Energy Association...

District Energy is in renaissance, if you recall the many dozens of networks that used to exist in the 1960's/70's, or if you do not remember those old schemes you will see it as a new solution which is currently bursting onto the UK heating and cooling market as the golden bullet to solve low carbon heat supplies in dense urban areas. Either way, it is a method of delivering low carbon energy which is clearly seeing a considerable increase in uptake in the last two to three years.

However, there are still barriers to implementation which include high initial capital costs, lack of understanding of how to design networks, apart from a few specialists, and almost no fiscal support for the implementation phase.

Fortunately, the situation is changing. As the uptake of district energy (district heating and/or cooling) rises, the market expects installation prices to fall as new entrants move into the industry and increase competition.

There are steps being taken to introduce codes of practice and training and considerable attention is now being drawn to the issue of secondary network losses in new build residential developments. This is particularly a problem where a lack of thought has been put into the design of the heating network from the point it enters the apartment block, up to each dwelling. With unit dwelling annual heating and hot water consumptions in the region of 4,000 kWh or less, the amount of energy lost in transmission of

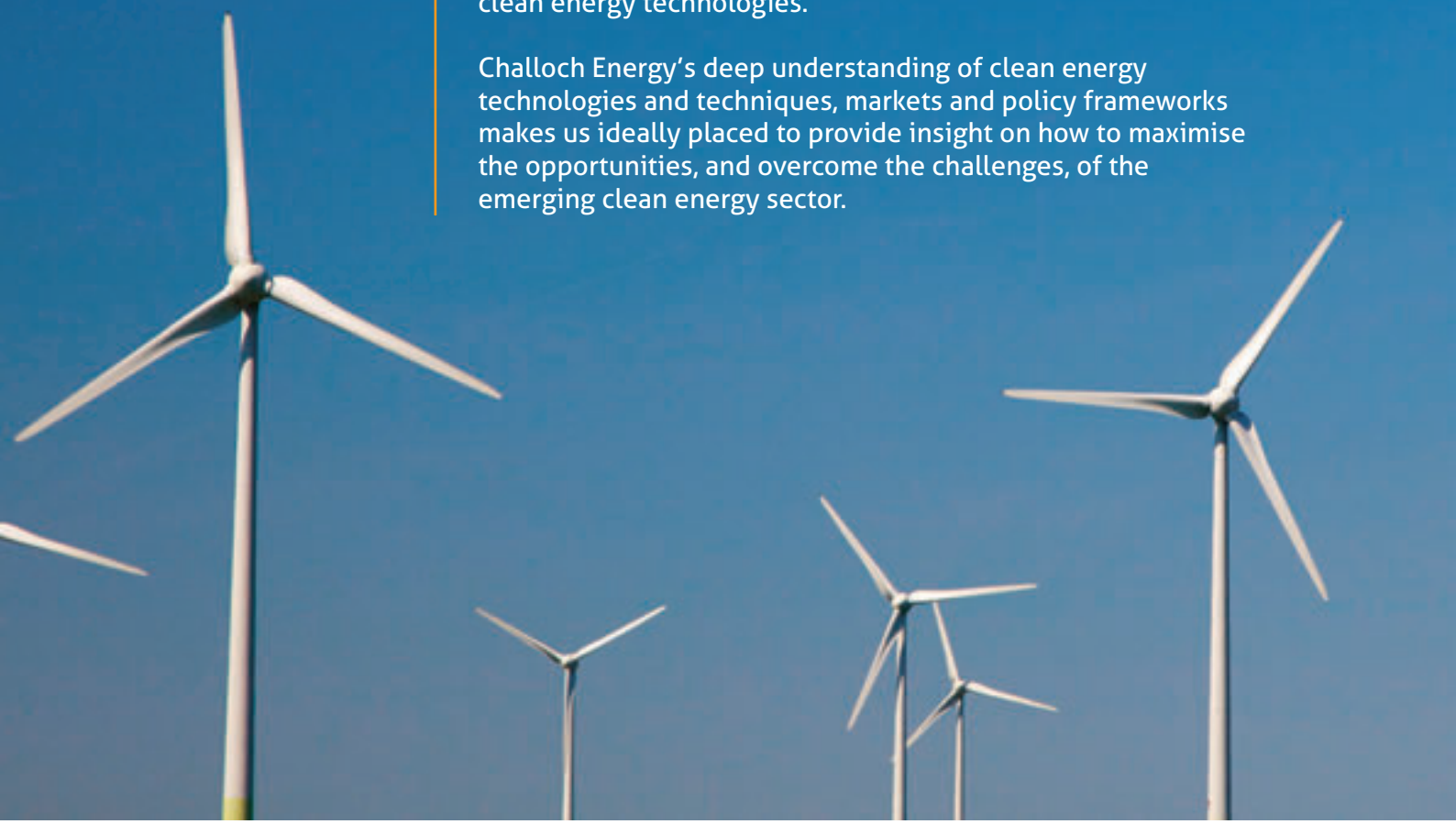
Continued on page 38...

20 years of experience in the energy efficiency of buildings and industry

Clean, low carbon energy has emerged as a suite of effective solutions to delivering Greenhouse Gas reductions to combat global climate change.

Challoch Energy believes that societies need a mix of energy efficiency, CHP and Renewable Energy meet the challenge of massive reductions in Carbon Dioxide emissions. Whilst technological innovation is necessary to bring forward new and improved technologies, much can and should be done with existing technologies and techniques. Challoch Energy focuses its efforts on helping business and governments to deploy clean energy technologies.

Challoch Energy's deep understanding of clean energy technologies and techniques, markets and policy frameworks makes us ideally placed to provide insight on how to maximise the opportunities, and overcome the challenges, of the emerging clean energy sector.



Challoch ENERGY

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A relatively simple installation of district heating network in the highway. The pipes have been laid in place and are yet to be jointed

Continued from page 36...

that heat to the dwelling is becoming proportionally higher and a major issue. Consultants are solving this by ventilating risers and even in some cases I have heard of air conditioning being added to overcome the overheating problems resulting from these heat gains. However, in reality sensible network design including routing, levels of insulation and operating temperatures can do much to reduce these losses to acceptable levels, removing these rather cumbersome engineering solutions to a problem which should not exist.

What is certainly true is that once an urban area has a district energy network, it has essentially future proofed its energy system. When the initial source has reached the end of its useful life, e.g. gas fired CHP, then other energy systems such as localised energy from waste, waste heat recovery or other LZC emerging technologies can then be bolted into this network to effect an "energy generation heart transplant".

However, the industry still needs support to deliver this expected level of growth. Detailed analysis of every urban area in the UK carried out by the UK District Energy Association demonstrated that it would be realistic to take the percentage of homes connected to a network from 2% to 14% by 2050. This analysis however assumes the implementation of a low carbon heat network incentive sitting along-side the RHI. The government is currently considering a RHI Network Uplift – which is fantastic news – but as many schemes currently being delivered are using gas fired CHP as their initial source, this will not apply, requiring further work.

There has been an impressive number of over 80 local authorities taking up DECC's Heat Network Delivery Unit (HNDU) funding, to explore the feasibility of a network in their area. However, as the former Head of the HNDU commented at the 2014 UKDEA AGM, the success of the HNDU will not truly be judged by the feasibility funding it has awarded, but by the pipes which are being installed as a result of that funding in four years' time.

Coupling this HNDU funding with the GLA's push for heat networks in all new developments across London means that it is clear that the district energy landscape will be very different in 2018 from where it is today, the question is just how different. ■

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Image: © Cambridge Archaeology Unit

Planning and Excavation: A joined-up approach

Tim Howard, Policy Advisor for Institute for Archaeologists explains the importance of planners and archaeologists working together to preserve our history...

It is surprising to many that excavation is not the automatic response of archaeologists assessing the likely impact of development upon buried remains. 'After all,' they say 'it's what you do'.

However, excavation is essentially a destructive exercise precluding much, if not all, further investigation of a site. Nor in truth is it mitigation in planning terms since the destruction of an archaeological site is no less complete because it is accomplished by an archaeologist as opposed to a groundworker. What excavation does provide is compensation (offsetting in the language of environmental impact assessments) for the loss of a site by expanding our knowledge of the past. Planning guidance like the English National Planning Policy Framework (NPPF)* are designed not to protect the professional archaeologist, but to ensure that the public benefit from intervention, eg making sure that the communities living in and around development sites are at the core of decision making, and are the beneficiaries of any investigation.

This distinction is not academic and underpins the application of rigorous standards for the excavation of archaeological material. As the English NPPF tells us, 'heritage assets are irreplaceable', so there are no second chances and excavations have to be 'on the money' in every sense of the word.The preferred option for buried archaeological remains in assessing applications for development is preservation in situ (enshrined in Valletta Convention (European Convention on the Protection of the Archaeological Heritage (Revised)[1] and confirmed in PPG16, PPS5 and now the NPPF). However, as NPPF makes clear,

the preservation of archaeological remains is one of many, often competing considerations, which must be accommodated in the planning process. Even when there is archaeological interest in a site (and 'it is estimated that only a small proportion – around 3% – of planning applications following initial assessment have sufficient archaeological interest to justify a requirement for detailed assessment.' (as stated in the National Heritage Planning Practice Guidance), in most cases the presence of archaeological material on site does not preclude development, which often proceeds subject to conditions or obligations requiring some form of archaeological intervention.

Archaeological interest can relate to undesignated heritage assets as well as designated ones (such as scheduled monuments and listed buildings). Heritage assets are defined in the NPPF as: 'A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest.' Over 95% of the historic environment is undesignated and is regulated primarily through the operation of the planning system. 'Heritage interest' includes 'archaeological interest' which is explained in the NPPF as follows:

'There will be archaeological interest in a heritage asset if it holds, or potentially may hold, evidence of past human activity worthy of expert investigation at some point'.

The line between pre-determination assessment and evaluation and post-determination intervention (covered in conditions or obligations attached to or accompanying the permission) has in the past been blurred.

Where a decision in-principle is made to allow a proposal that would cause harm to the archaeological interest of an asset, the applicant or developer will normally be required to commission an expert programme of investigation, recording, dissemination and archiving to a degree and in a manner proportionate to their importance and the impact of the proposal. This involves careful drafting of conditions or obligations. The Association of Local Government Archaeology Officers, IfA and others have promoted the use of conditions similar to this:

No demolition/development shall take place/commence until a Written Scheme of Investigation has been submitted to and approved by the local planning authority in writing. The scheme shall include an assessment of significance and research questions; and:

- The programme and methodology of site investigation and recording;
- The programme for post investigation assessment;
- Provision to be made for analysis of the site investigation and recording;
- Provision to be made for publication and dissemination of the analysis and records of the site investigation;
- Provision to be made for archive deposition of the analysis and records of the site investigation;
- Nomination of a competent person or persons/ organisation to undertake the works set out within the Written Scheme of Investigation.

No demolition/development shall take place other than in accordance with the Written Scheme of Investigation approved under condition (A).

The development shall not be occupied until the site investigation and post investigation assessment has been completed in accordance with the programme set out in the Written Scheme of Investigation approved under condition (A) and the provision made for analysis.

The Written Scheme of Investigation should be written by an archaeologist (a contractor or consultant) in response to a Project Brief, issued by the archaeological advisor on behalf of the relevant planning authority. Amongst other things, the WSI should set out the

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CAMBRIDGE ARCHAEOLOGICAL UNIT

Archaeological services include:

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- Excavation
- Public outreach
- Post-excavation analysis
- Survey
- Historic Building Recording
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The Unit is recognised as one of the premier archaeological contractors within the country. We have a proven track record in delivering large scale projects to completion and an enviable reputation for publication. We can draw on a wealth of expertise, both in-house and from within the University of Cambridge.

Recent projects include:
A14 evaluation
Ham Hill, Somerset Iron Age hillfort excavation
North West Cambridge development
Northstowe new town pre-planning evaluation
Grand Arcade, Cambridge excavation
Must Farm, Whittlesey, Peterborough excavation
Quarries across Norfolk, Suffolk, Bedfordshire, Lincolnshire and Cambridgeshire

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REGISTERED IFA ORGANISATION

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research questions being asked of the site at the outset of the project, and should make commitment to a post-excavation assessment of the finds made, their analysis and publication/dissemination, as well as the long-term deposition of the site archive.

The Project Brief normally requires work to be carried out to IfA Standards and, subsequently, where excavation is involved the IfA Standard and guidance for archaeological excavation (2008) will be referred to (you can find this on the IfA website www.archaeologists.net/sites/default/files/node-files/IfASG-Excavation.pdf).

In summary, the Standard is:

"An archaeological excavation will examine and record the archaeological resource within a specified area using appropriate methods and practices. These will satisfy the stated aims of the project, and comply with the Code of conduct, Code of approved practice for the regulation of contractual arrangements in archaeology, and other relevant by-laws of the IfA. It will result in one or more published accounts and an ordered, accessible archive."

You can also find IfA Standards and guidance for regulating other activities including watching briefs, buildings investigation, archives and finds [2].

It goes without saying that agreeing and outlining the work programme and highlighting the relevant standards and guidance are just the beginning of the archaeological works. The success of the project and the quality of the work undertaken will then depend on a number of factors. Perhaps the most important is appointing the right person to do the job.

Archaeological work should be carried out by competent and accountable practitioners and organisations – essentially by professional people who are technically competent to undertake the work and ethically competent to see the importance of engaging both the public and the specialist in the dissemination of knowledge about the past.

IfA is the accrediting body for archaeological practices and individual archaeologists and if you are looking for an archaeological professional, you can find a list of IfA Registered Organisations on our website [3] or ask archaeologists if they are accredited members of IfA (or you can spot them by looking for the post-nominals PIfA, AIfA or MIfA).

By engaging the right people to undertake the work, you should be confident that the investigation will meet the professional standards demanded by the planning authority – and if they are not, you can raise concerns about IfA members and Registered Organisations via the IfA disciplinary process [4].

An archaeological excavation is not purely about digging up buried remains; it is about correctly and appropriately recovering information about the past and ensuring that information is understood fully in its local and national context.

The archaeological excavation that you see on development sites is just one phase of the project, and the work that follows (such as the examination of the finds recovered) allows the excavated plan of the site to be understood. The post-excavation work is when the detailed analysis of the materials recovered takes place, and where all the information begins to knit together to reveal how people used that particular site.

Once a project is published (to an appropriate level), the archive from the site is deposited with the named repository (identified at the beginning of the project). A project has not been completed until the archive has been successfully transferred and is fully accessible for consultation (see the Archaeological Archives Forum for guidance on archives [5].

If all the archaeological elements of the project are handled well – from project planning through to deposition of the archive – the development will deliver improvements to our infrastructure, a stimulus to growth, new research into our past, added value by increasing understanding of the heritage of an

Image: © Cambridge Archaeology Unit

area, and additional benefits and plaudits in terms of public relations, corporate social responsibly and sustainability commitments.

Current guidance in England is now geared to produce public benefit (through increased public knowledge and engagement) and discussions around planning guidance in Scotland, Wales and Northern Ireland are expected to demand similar public benefit. As a result, the potential of an archaeological excavation to add value to development projects of all shapes and sizes is strengthened: below-ground archaeological features are something many developers may not want to be present on new sites, but, by working together there is an opportunity to genuinely enhance local communities through sustainable development. ■

*Planning guidance differs in England, Scotland, Wales and Northern Ireland.

[1] http://conventions.coe.int/Treaty/en/Treaties/Html/143.htm

[2] www.archaeologists.net/codes/ifa

[3] www.archaeologists.net/regulation/organisations

[4] www.archaeologists.net/regulation/complaints

[5] www.archaeologyuk.org/archives/aaf_archaeological_archives_2011.pdf

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Setting standards for the study and care of the historic environment

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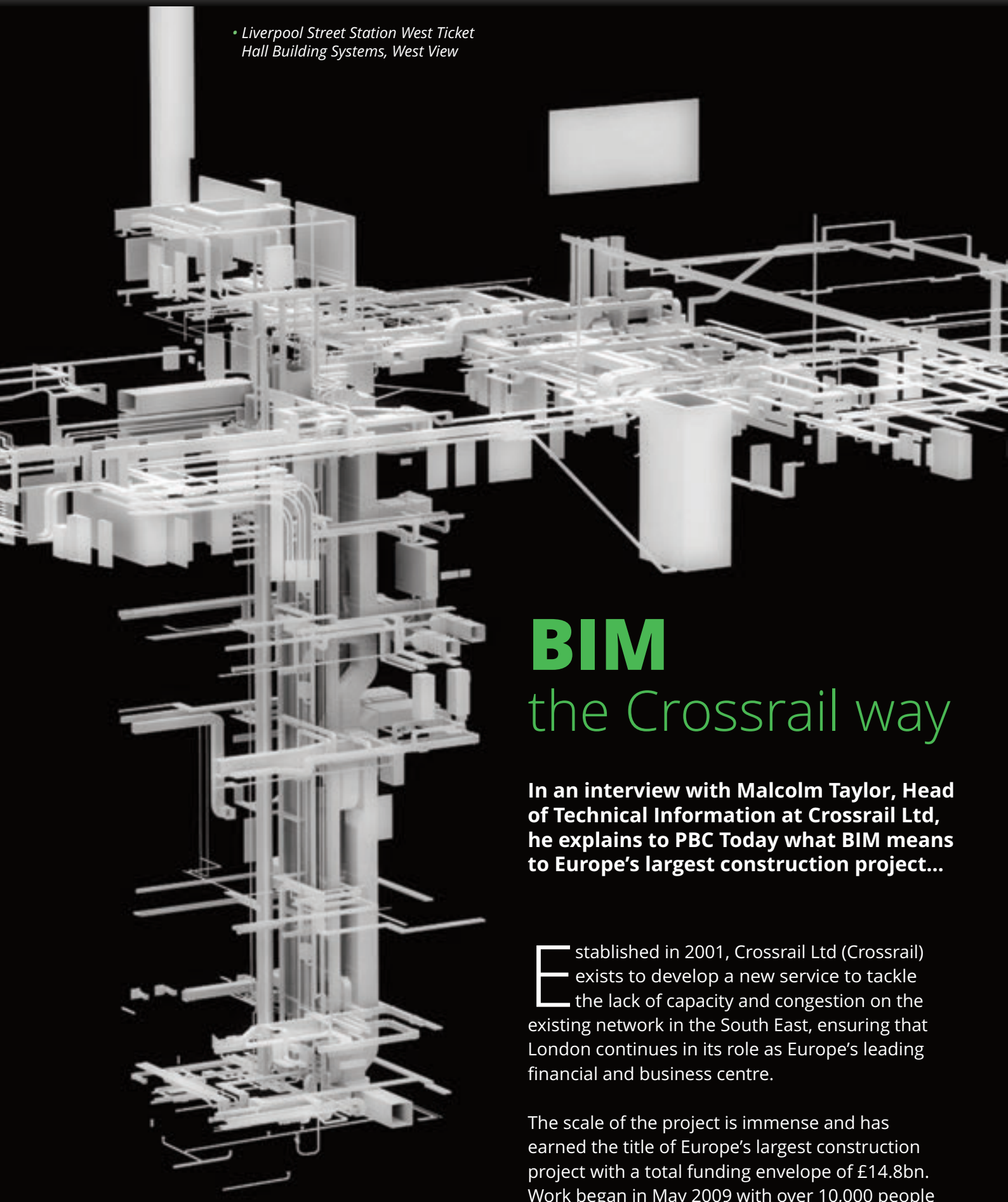


• *Liverpool Street Station West Ticket Hall Building Systems, West View*

BIM
the Crossrail way

In an interview with Malcolm Taylor, Head of Technical Information at Crossrail Ltd, he explains to PBC Today what BIM means to Europe's largest construction project...

Established in 2001, Crossrail Ltd (Crossrail) exists to develop a new service to tackle the lack of capacity and congestion on the existing network in the South East, ensuring that London continues in its role as Europe's leading financial and business centre.

The scale of the project is immense and has earned the title of Europe's largest construction project with a total funding envelope of £14.8bn. Work began in May 2009 with over 10,000 people

employed on the 40 construction sites, clocking up an estimated 57 million working hours so far.

The man at the helm of technical information for Crossrail is Malcolm Taylor, responsible for BIM strategy and implementation; asset information management; technical data management; document control; GIS; and configuration management. A Chartered Engineer and former Rail Director for a major global consultancy, he has over 30 years' experience in the design, construction and maintenance of large-scale transportation projects around the world, with a particular emphasis on railway design, programme and project management.

Europe's largest construction project therefore has the most in-depth utilisation of technical information to date. Luckily, with a seasoned and enthusiastic veteran such as Taylor at the helm, Crossrail is exploiting, exploring and developing technologies that will be copied and built upon in future projects.

In a project that began in a pre-BIM world, Taylor has seen information technology develop to the point whereby the operation is already achieving around Level 2. With many contracts signed before the Government's BIM Strategy was released, Crossrail had already began some of the construction projects and were working in a BIM environment.

The competency of contractors to understand 3D modelling and information sharing was key, with Taylor stating that:

"We required designers for the main design work who were skilled in the art of 3D modelling. What takes basic 3D design into a level 1 BIM is pretty straightforward. Level 2 is more about the coordination of that design and merging together the various different types of models that one might have for civils, with architecture, mechanical and electrical, and bringing those together. We were confident that what we required our designers to do, was to work within our Common Data Environment (CDE) and that was something we set up very early on in 2008/9 within our CAD world."

BS: 1192 – a single source of truth

Creating the CAD CDE was made an easier task by following the BS: 1192 "to the letter" according to Taylor. He said that:

"The standard described everything that we needed to do to create the CAD CDE and the approach that we needed for collaboration in design. That document in 2008 really did set the scene for BIM, even though it wasn't called BIM at that time.

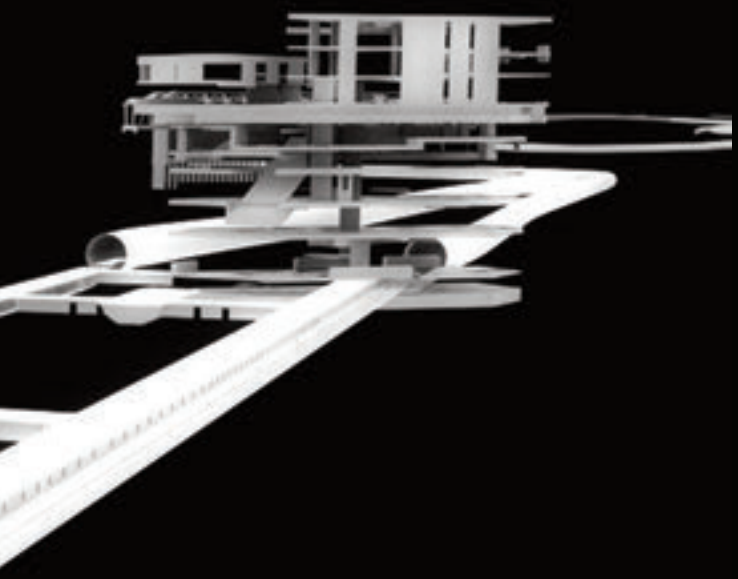
"This concept of a single 'source of truth' and one version of everything in one place that is owned by the client was, for us, a simple concept that meant it didn't matter whether we had 2 designers or 20, as the same principles and processes apply. Once you've captured that spirit of the concept of a CDE and collaborative working, the size of a project doesn't matter as long as everyone

• *Whitechapel Station East Ticket Hall, West View*

follows the rules. BS: 1192 created the BIM environment for us meaning that contractors weren't requested to follow Crossrail's methodologies. Instead, it showed them how to comply with the British Standard.

"No one had really implemented BS: 1192 to the same scale as CRL before, but the same principles apply for a small or big project – the concept of a CDE with standard processes and standardised principles."

Achieving 'buy-in' from all contractors was made easier with the launch, in association with software supplier (Bentley Systems), of the Information Academy. It was set up to provide hands-on training



to the supply chain on the latest technology and software being used by Crossrail. The academy raises awareness in contractors about the way in which data is collected and managed, and also the processes and procedures. It really comes down to "awareness training" according to Taylor – not teaching people how to use 3D modelling, but teaching a standardised approach.

"People have bought into the idea. It's free. The great thing is that it isn't rocket science. People who can do 3D modelling can work in this new environment, and if you have good competent technical staff who understand 3D, it is not a big leap" he added.

Common data

According to Taylor, one of the biggest challenges in 2010 was the transfer of all records and documentation to a new CDE. The documents and data used to be on whole variety of IT drives – stored by different teams on different machines. When the main contract works commenced, they required all contractors to work in the document CDE as well as the CAD CDE. Taylor said that: "Contractors naturally want to do their own thing in their own systems, but the trick to getting BIM to work is to get everyone to work in one way."

This desire to work in familiar systems is understandable, but on a project of this scale, consistency across contractors has to prevail. Taylor understood the need to persuade contractors and explain the reasons for utilising the CDE's.

"Apart from telling them that contractually they are obliged to work within our CDE's, we have to show why, and explain the reasons. By explaining the benefits, we ensured buy-in. All the good ones have adopted it and are doing amazingly well."

To avoid any confusion in terms of legal ownership of the data, it remains firmly with Crossrail with a clear policy that contractors, as suppliers of data, are responsible for creating it correctly, and are liable if something should go wrong.

Lessons learned

For Taylor, the biggest lesson learned in the world of information is the need to be prescriptive as to exactly what outcomes are expected. He explained:

"In an instance where you have a project with 1 designer, 1 architect and 1 contractor, you can usually just let them get on and do it the way they want. But where you have several dozen designers and many dozens of contractors, you need to be very clear regarding outcomes, or you as a client will need to sort all the differences at the end.

"We thought we were being prescriptive enough, but in the future I would be even more specific. When we talk about having particular levels in a CAD model for instance, we don't mind how it's created, but the output is what we are being prescriptive about. There is a subtle difference between us telling people how to do things, which we don't like doing, or being clear about what you want produced at the end of day. We are interested in output – not stifling creativity."

Again, the importance of BS: 1192 is emphasised by Taylor due to the "beauty of its simplicity". With over 1.25 million CAD models filed and 1.5 million documents in the CDE (growing daily), ensuring consistency is key and this is where the standard proves its worth.

The challenges ahead

There are still challenges to face in terms of ensuring all data can move through the different life-cycles – into operations and maintenance especially. The operator and maintainer are themselves trying to understand what the BIM world means to them.

This year, the PAS: 1192 part 3 was published and explains how the operations and maintenance world should work in a BIM environment. Crossrail is trying to make sure that the data created can not only work when passed over, but that the information is in the right place, of the right quality and at the right time. Taylor likens information to areas like plant, material and labour, which are a key resource in construction and design. He added that:

"The BIM environment, not just CAD, but data and documentation is changing project management significantly in the way in which we deliver major projects like Crossrail. Ultimately, the big challenge is getting it into the operation and maintenance world."

However much information is seen as a key resource, it has to be the right information. It is important to be mindful of the amount of information used, or "else you get into a world of really large big data. We are interested in creating a digital legacy here – using the best information that fits the job of operations and maintenance, and having information available for the user of the railway" added Taylor.

The software

Different platforms are required for different intimations. For instance, one is required for CAD, for GIS, and for finance etc. Within BIM, this actually means different databases that are all linked together, enabling a user to extract information of any kind – even asset information whereby a maintenance manual could be retrieved. Having all this information connected changes the way in which projects are delivered, and if you know how to use databases, it's not a difficult process.

By using a standardised approach in terms of file formats, the nightmare of data interoperability is eliminated. For Crossrail, the decision about which software to use was simple. Knowing what the operator and maintainer used, logically led to them using the same system.

For Taylor, an interesting area is one of work flows. He explained that by using simple transactional activities within the database, Crossrail did not need software for bespoke document management systems or contract administration systems. By using workflows within the databases, all valuable information is captured at source and stored immediately. "When we come to the end of Crossrail in 2018, we absolutely know where everything is. By having lots of drop down menus and templates we are automatically capturing information, thanks to the technology to hand."

Benefits of BIM

A successful BIM project relies on people that can collaborate and understand and utilise technology.

In the technology and project management world, another benefit is that it is possible to mix primavera schedules with CAD models and produce 4D sequences which show you in a visual way something being built. This is becoming amazingly important

as one can view the timeline for what is proposed for construction.

Having good records management skills is equally important. In terms of basic competencies, good groundings are required in IT and database management. Taylor outlined that: "the technologies are already there, the processes are already there, but the trick really is to make sure you have the right people."

Taylor talks of Crossrail as building two railways. One in the digital world, and one in the physical:

"We are building underground in a very busy city – the importance of being able to build it first of all in the virtual world to make sure all the pieces fit, is absolutely critical. We don't want to find problems when 30 metres underground. Getting it right in the virtual world means we will save very significant amounts of waste for example from clash detection, but there are really interesting softer benefits such as safety too. We have seen 4D models used for safety briefings showing staff, through the time sequence, what has to be done and when. So now imagine an interactive model being taken into the operations and maintenance sphere – a station manager can use it to show staff where to store plant or for evacuation training etc. This visualisation world is already taking over the design and construction world, and ultimately it'll move into the operations and maintenance arena as BIM gets extended post 2016."

BIM level 2 by 2016 – are we ready?

For Taylor, he believes that most of the supply chain is ready. But he posed another interesting question: are the clients ready?

"From a Crossrail point of view, we want the ultimate operator and maintainer – Transport for London – to use the information we're collecting in the best possible way. So one of our objectives is help the client to help them get ready. PAS: 1192 part 3, which came out earlier this year is a great help, but there's still a way to go yet for some clients. Across construction, asking if clients are ready remains an unanswered question."

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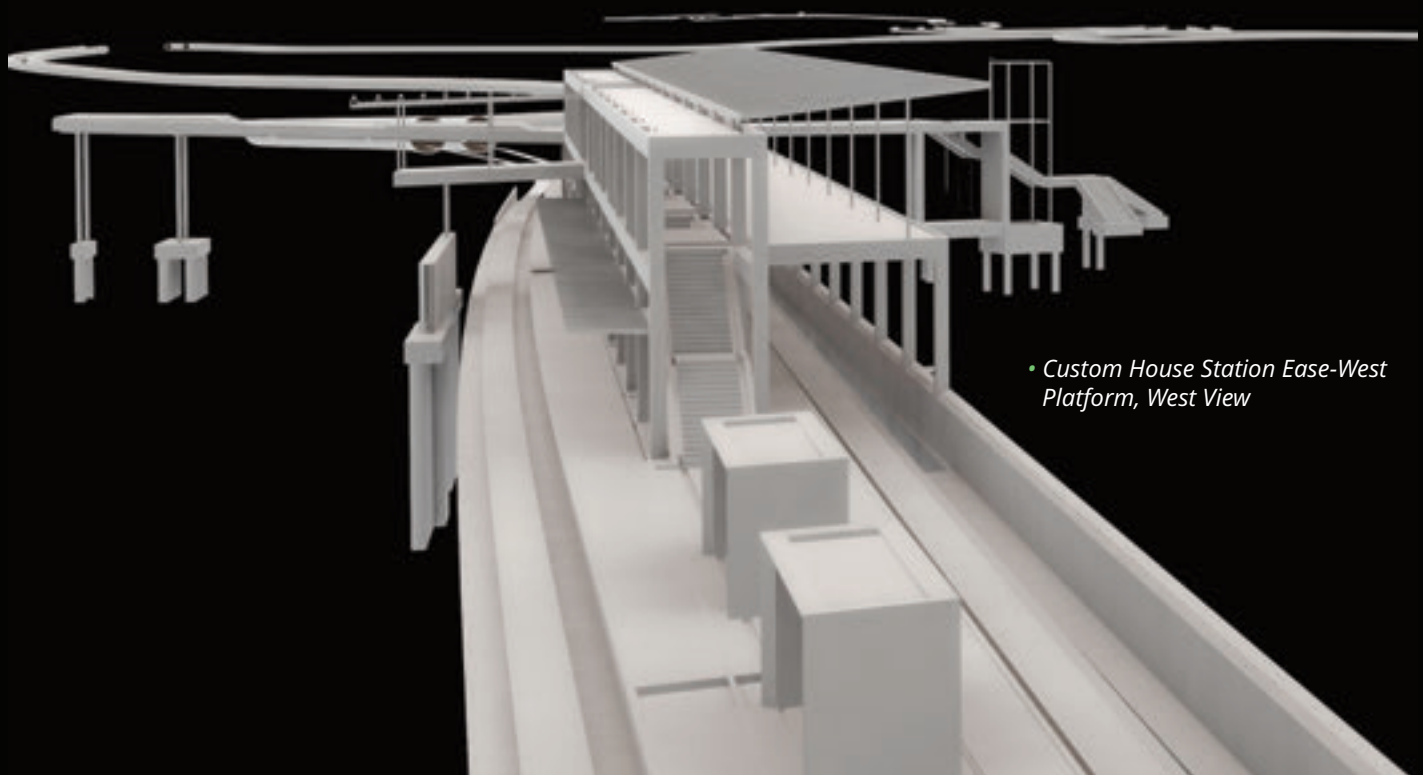

• *Custom House Station Ease-West Platform, West View*

BIM, CAFM and Soft Landings

Property and cost consultant Rider Levett Bucknall is the first organisation in the UK to deliver an integrated BIM and Computer-Aided Facility Management (CAFM) approach to a construction project, delivering tangible benefits to the client and the scheme itself.

Combining BIM and CAFM is a pioneering approach and is underpinned by Soft Landings, the Government's construction strategy that aims to align design and construction with operational asset management.

The project in question is the £40m redevelopment of the Champion Hill Campus at King's College London. It is already being showcased by the Government as a successful case study for this cohesive approach and Rider Levett Bucknall was invited by the Government to present to industry and government leaders earlier this year (2014).

The Champion Hill scheme completed in September 2014. It comprises 720 student residences across four new-build blocks and the renovation of a Grade II listed building which accommodates the student social hub and support services.

Rider Levett Bucknall secured its role as project manager and cost manager by developing this revolutionary approach to BIM and CAFM which ensures that data generated during the design and construction phase is fully utilised to enable extremely efficient building commissioning, training and handover.

Traditionally the two information processes have remained separate silos with no direct transfer of the data from the construction phase to the operational stage.

Results are achieved by seamlessly exporting BIM data into the CAFM system including maintenance information to create 'data rich' asset information such as planned preventative maintenance (PPM) schedules and enhanced help desk functions.

The process includes detailed energy monitoring; this data is fed back from the Building Management Systems (BMS) to highlight any variances there may be from the predicted energy use during the design stage. Full training of maintenance staff has also been programmed into the scheme to ensure that building operations are fully understood at handover. The planning of the commissioning process commenced 12 months before the project was due to complete.

David Quirk, partner at Rider Levett Bucknall said: "Robust processes have been developed as part of this combined approach to make sure that not only is the building is functioning fully at handover but that an on-going legacy is provided, with facilities management and everyday operations embedded from day one.

"The project is BREEAM Outstanding with an Energy Performance Certificate (EPC) A Rating.

"To deliver this outcome we facilitated numerous workshops with stakeholders to articulate their varied and detailed requirements, which formed the cornerstone of the project brief. Following public procurement rules, we secured a contractor fully committed to delivering BIM and Government Soft Landing requirements. The contract was awarded to GB Building Solutions and we have worked with its team and the College to convert the strategy into a detailed delivery plan, covering the pre-commissioning, handover and post occupancy activities to ensure objectives are achieved.

"Many large projects delivered in the UK now have an element of BIM and we believe that there will be massive take-up of this integrated Soft Landings, commissioning and facilities management approach in the next few years. It is a Government backed initiative so by its nature has implications for both public sector projects and the wider construction market."

Rider Levett Bucknall is currently delivering six projects using Government Soft Landings (GSL) across sectors including education, healthcare and research, for both new-build and refurbishment projects, ranging from £2m to £100m.

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Mindful BIM collaboration

Collaboration is a key element in the successful execution of a BIM project and can help to share information across teams. David Philp, Head of BIM at Mace and the UK BIM Task Group details how BIM can aid collaboration...

Building Information Modelling (BIM) is purported to aid collaborative working. Every conference or symposium marries these two themes together without really unpacking what this relationship looks like. Like BIM, collaboration has different meanings depending on your perspective and what lens you are looking through, indeed the Collins Dictionary defines collaboration as either:

1. The act of working with another or others on a joint project;

2. Something created by working jointly with another or others;

3. The act of cooperating as a traitor.

Most would say that one and two are the most commonly related meanings in the context of our industry, though some I am sure would recognize the third definition as a reality on some projects.

Hopefully we all identify collaboration as a key element in the successful delivery and execution of a project programme and as a lever to help break down silos and successfully share information across teams. The reality, as the author Morten Hansen points out is that "bad collaboration is worse than no collaboration" and that "the goal of collaboration is not collaboration itself, but results." So how can BIM really help us collaborate and deliver better outcomes?

In this author's opinion, the main pedal to ensure successful collaboration in a BIM environment is a clear 'purpose'. High-performing teams are driven by a well-defined purpose (do not confuse this with a vision statement) and if BIM (Level 2) is good at anything it is; a) lots of new acronyms, but also b) defining clear information requirements at all stages of the asset life-cycle.

Level 2 maturity begins with clearly defining the purposes of the model(s) and their uses. These are referred to as the organisational and asset information requirements and are articulated to the supply chain through an Employer's Information Requirement (EIR).

Defined information requirements, defined processes (PAS1192-2 and 3) for information delivery and agreed data exchange standards (BS1192-4 COBie) create a strong foundation for collaboration, and when properly worked through with the entire project team, help create unifying goals. The wise client would also do well to additionally invest in BS 11000 Collaborative Business Relationships which defines roles and responsibilities and supports collaborative decision-making.

Level 2 BIM also ensures that collaboration extends beyond delivery, with the requirement for 'Soft landings' and the requisite for an operational champion to be involved throughout the plan of work for that project – starting with the end in mind and using the model as a basis to visualise and test the lifecycle solution at pre-construction stage. This is a great win in an industry where there is normally a large chasm between the delivery and operational lifecycles.

BIM is data rich in the context of both geometric and alphanumeric data which can be visualized in a 3D, or indeed an immersive environment. In terms of low hanging fruit, BIM allows all stakeholders in a project

David Philp MSc BSc FRICS FCIOB FGBC
Head of BIM at Mace and
Head of UK BIM Task Group

to clearly understand and explore the project life-cycle – often now assisted by 'gamification' methods and augmented reality (AR) techniques. It is essential however that organisations avoid 'lonely BIM', where one solitary party sits staring at their exquisite model. Models need to be shared and used as a backdrop for decision making; if you like the modern virtual day camp fire but without marshmallows and bad singing. Projects using BIM should always consider as part of their strategy the creation of physical spaces where collaboration workshops can be undertaken, models reviewed and decisions made with screens such as short throw projectors. These are often referred to as 'big rooms' or Computer Assisted Virtual Environments (CAVEs).

It is also critical that rigor be given to managing information flow between the project stakeholders within the context of a common data environment (CDE) as set out in BS 1192:2007. In addition, the collaborative production of architectural, engineering and construction information Code of Practice, which establishes the outline methodologies for setting up the BIM project cannot be ignored. To exploit collaborative working processes, a common methodology for managing the data produced by, and between all parties, must be used. This should include the naming of data as well as a process for exchanging data. This common data environment is a key component of both level 1 and 2 BIM maturity.

Forms of procurement should also be considered as a lever to encourage collaboration. The Government Construction Strategy trialled the use of procurement routes which sought early contractor engagement. The value of this timely appointment should not be underestimated, however, it is essential that this same strategy be considered in the early engagement of specialist contractors and manufacturers who are key to a joined up data hierarchy. This is as much a cultural change as it is a process change.

Open data standards which allow the transportation of information and support interoperability are also really important to the collaborative investment we need to ensure that everyone can play on a level field, especially SMEs. This is why the development of COBie and IFC are crucial to ensuring the uptake of BIM across the construction community.

We must also consider the danger of information overload in a collaborative network; it is therefore essential that the right amount of information, to the right level of maturity, at the right time, is established. It is crucial therefore that a well thought out Master Information Delivery Plan (MIDP) is established through a collaborative process before the information exchange process begins.

What we must always remember is that construction is a human endeavour and technology is there to support collaboration and not replace it. Indeed, the biggest danger is that we get bogged down in a technical discussion when BIM is a behavioural change programme more than anything else. ■

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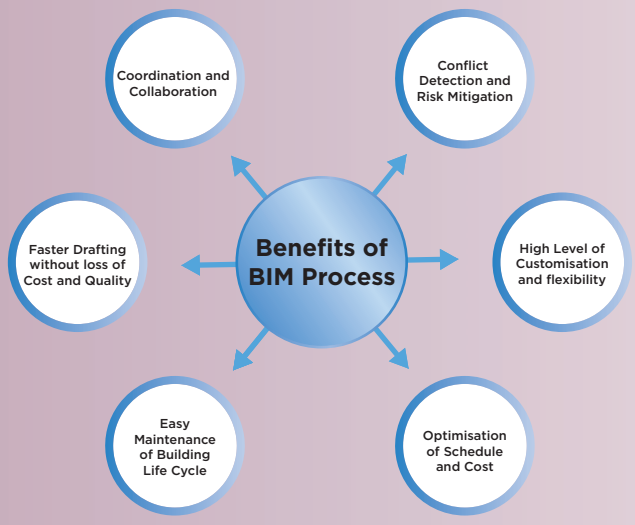

What is BIM?

Building Information Modelling is a work-flow process that uses modelling and software to create a digital model that will react and perform as it will in the real world.

This model is used throughout the construction and ongoing maintenance of the project.

The Government have introduced a BIM Mandate, where by 2016, all professional businesses and construction workers wishing to work with, or for the Government, must be BIM trained and compliant to level 2.

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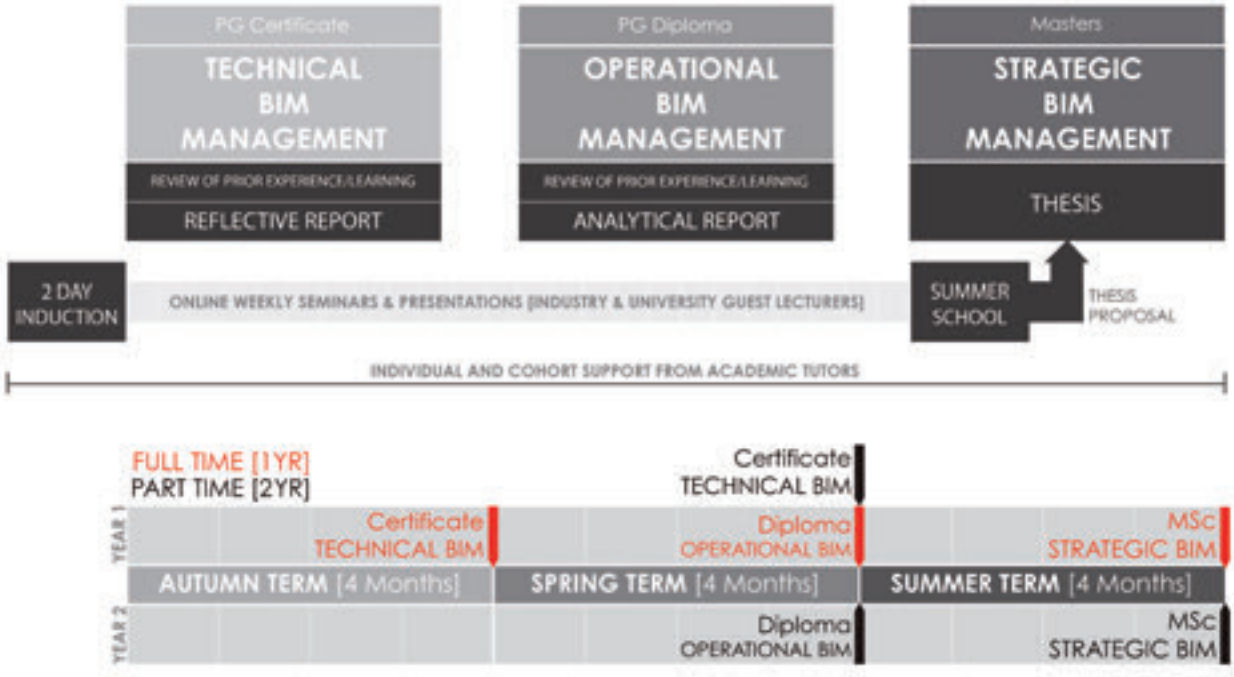
Building Information Modelling (BIM) reaches parts of an organisation other processes do not. It changes Technical, Operational and Strategic Management of organisations/projects needing restructuring. How all parties relate to each other changes, legal arrangements need rethinking, HR is impacted, organisational finances change: quality assurance and risk management procedures need reviewing and updating – nothing escapes!

There needs to be a fundamental change in relationships from adversarial to cooperative. By having diverse and multi-disciplined participants in each cohort, the knowledge sharing increases participants' understanding of all stakeholders' needs and requirements in a BIM environment informed by technology, research and management skills in standard and unpredictable scenarios..

STRUCTURE & TIMEFRAME



The programme recognises three key areas in BIM Management throughout the whole construction lifecycle: Technical, Operational and Strategic Management. For those not wanting/needing to cover all these disciplines, the course is devised in three modules, following the three key areas, so that a certificate is awarded for the first, a diploma for the second and a masters for the third.

Since practitioners do not have the time to commit to full-time learning; the programme is set-up as distance learning over two years, with an option to do full-time in one year.

Cooperation and collaboration are key ingredients of BIM management and are encouraged amongst participants. Hence the programme starts with a two-day on-campus induction where everybody engages in group activities. So much so that we find the cohorts arrange “BIM” days themselves. The University helps facilitate these through campus facilities and academic staff attendance. Prior to the final module there is a week-long summer school to discuss the research proposals for the masters theses.

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Dr. Noha Saleeb BArch (hons), MSc, PhD, FHEA
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Educating BIM: changing the face of construction

The key to the success in transforming the construction industry to operate at Level 2 BIM by 2016 now lies very much with education and training providers. Dr Jason Underwood at the University of Salford provides a detailed overview of the challenges that remain...

Within the UK construction industry, the last few years has seen momentum to transform the sector driven by the Government's commitment and mandate to digital information delivery and Building Information Modelling. While BIM is presenting a relatively new phenomena/concept for an industry that has operated predominately in the same way for over a century, academic researchers have been engaged with the concept for over 20 years.

Research, particularly in the area of construction ICT, has focused on exploring the facilitation of collaboration through shared data models and exchange between commercial design, analysis, planning, estimating, etc. software. It has also focused on enabling processes, which has led to the concepts of BIM and 4D, 5D, 6D, and nD modelling, which facilitate the multidisciplinary 'information' perspectives of emerging projects/assets. Such research has been driven in response to government and industry initiatives, including the Latham (1994) and Egan (1998) reports, which highlighted that the industry was suffering from low productivity and inefficiencies. They also identified that substantial wastage could be driven out from the delivery of

assets through significant improvements in adopting a client focus, improving team work/collaboration and changing the culture. While previous government initiatives have also attempted to support a drive for change, these could be considered as paying lip service in terms of real commitment and there was an expectation that the industry would solely drive the change. While such initiatives and research focused on responding to the recommendations and on driving industry change, 12 years on Wolstenholme (2010) reported a lack of any implementation progress for the recommendations, pessimism about the future outlook for change, and a culture still very much engrained in avoiding or exploiting risk in order to maximise financial gain.

However, May 2011 brought about a real commitment from the UK Government to drive change and to transform the industry through the launch of its Construction Strategy. For over a decade, other national construction initiatives have taken the approach of mandating the use of BIM on public procured projects, particularly within the US, Scandinavia, and Singapore. The UK Government strategy, on the other hand, is also committed to working with the industry to facilitate the transformation through the provision of a set of standards, a classification system and documentation, etc. This Level 2 BIM suite is expected to be completed by 2015 and addresses:

1. Production of co-ordinated design and construction (CAPEX) information (PAS1192:2:2013);

2. Process delivery and use definitions for the operational phase of the asset (OPEX) (PAS1192:3:2014);

3. Interim data definition for information deliveries (BS1192:4:2014/COBie-UK-2012);

4. Suite of BIM commercial and contractual advice documents and standard forms (BIM Protocol);

5. Soft Landing policy and processes to ensure the effective involvement of users and operators in the development of the scope, design and delivery. This goes alongside ensuring effective training and handover into operations, and the structured gathering of Post Occupation (Operational) Effectiveness data that enhance both the current and future assets (Government Soft Landings - GSL);

6. Structured and standardised information Classification System;

7. Industry standard method of describing geometric, requirements and data deliveries at key stages of the project cycle (Digital Plan of Works);

8. Learning Outcomes Framework to ensure the provision of consistent training/education in line with BIM Level 2.

The suite goes a long way to provide elements that help to define 'what' Level 2 BIM is; however the key to the success in transforming the industry to operate at Level 2 BIM by 2016 now lies very much with education and training providers who need to consistently support 'how' the industry now goes about implementing the suite. As the UK construction industry indirectly employs over three million people and is highly diverse with a range of discrete sub-sectors, educating, training and upskilling both the existing industry and future professionals presents significant challenges.

We are now well within the midst of the Digital Revolution with the emergence of personal computers, the internet, social networking, ubiquitous computing, etc. The pace of change is accelerating at an incredible rate and is significantly impacting on our daily lives. Each generation experiences life, including education and work, very differently in that they are influenced both by the social and cultural values of the society within which they mature and by the technologies available. The Digital Revolution significantly influenced those born after 1981 (Generation Y) and has continued to do so amongst those born between 1994 and 2004 (Generation Z). This differs compared to previous generations (e.g. Baby-Boomers, Generation X) and a generation gap is more pronounced between the digital natives, who have grown up with technology, have no meaningful memory of life without it, and have become fluent in it, and digital immigrants who have adopted it as adults, and have

gained proficiency but interact with it in a fundamentally different way, therefore remaining 'immigrants'. The generation gap has significant implications between educators and learners and between current industry decision-makers and new/recent entrants; this has to be considered in the education and training systems and the requirements of a transforming construction sector.

From an education perspective, parallels can be made between the challenges the industry is currently facing in beginning to transform, and those encountered within academia in the education and training of existing and future professionals with the necessary skills and competencies required in a changing sector. As is similarly evident in the industry, early indications from a BIM Academic Forum (BAF) survey, which is due for publication later this year, suggests that the understanding, acceptance and importance of BIM amongst Higher Education (HE) academics within built environment, engineering, architecture, etc. is still considerably low. BAF was set up in response to the Government Construction Strategy with the aim of creating a dynamic collaborative group to enhance and promote teaching and learning alongside the research aspects of BIM. As students enter and subsequently graduate from HE, the nature of education serves to reinforce the siloed mentality that remains entrenched within the industry. Changing such a culture and mindset that exists among many academics presents a huge challenge requiring the transformation of HE curricula from one that currently reinforces a silo mentality, and leads to the development of disciplinary-specific (siloed minded) professionals.

The current curricula also need to evolve to ensure that BIM becomes consistently but not prescriptively embedded and to ensure that HEIs maintain the flexibility and creativity in their delivery of education. A number of initiatives currently focus on facilitating BIM-embedded education and training. BAF have proposed an academic roadmap to a longer-term vision that embeds BIM learning at the appropriate levels within 'discipline-specific' undergraduate and postgraduate education. This also begins to break down and establish the potential learning outcome requirements at each level of HE. The final part of the BIM Level 2 suite is aimed at third-party education and training providers and is currently under development with the Education & Training Working Group; this aims to enable the consistent capacity and capability of BIM Level 2 in the UK domestic market. However, adopting such learning outcome framework(s) within HE curricula will also require a change to the culture and mindset of academics to drive change in the current curricula and align with the needs of the next generations of learners.

Accreditation of HE programmes is important in externally demonstrating that course curricula meet the defined criteria and educational requirements set by the professional bodies to prepare students for their future careers. Incorporating relevant aspects of BIM within the defined accreditation criteria could also serve to further drive BIM to become embraced within HE curricula and thus help the shift from siloed mentalities. Many of the industry's professional institutes are embracing BIM through the delivery of BIM training in the form of CPD; however, in terms of HE, accreditation criteria that incorporates BIM is yet to receive any serious attention. This may be due to the previous lack of clear definition of Level 2 BIM or of industry uptake/demand, or a limited understanding of BIM amongst the professional bodies themselves.

As the industry continues to develop its understanding of BIM and gear itself for the 2016 mandate, the demand for graduates with not only disciplinary competences but also with some level of BIM knowledge and capability continues to increase. Potential students are also aware of the importance of BIM in further enhancing their employability potential and, along with accreditation, this is important in their choice of an appropriate programme of study. Professional bodies, HEIs, and other bodies, such as the BIM Task Group, BAF, etc., need to come together in order to begin to address the implications for a transforming industry and the accreditation of HE programmes that incorporate BIM. HEIs are presently in a fluid and transitional period; they need to educate graduates who meet the current needs of industry

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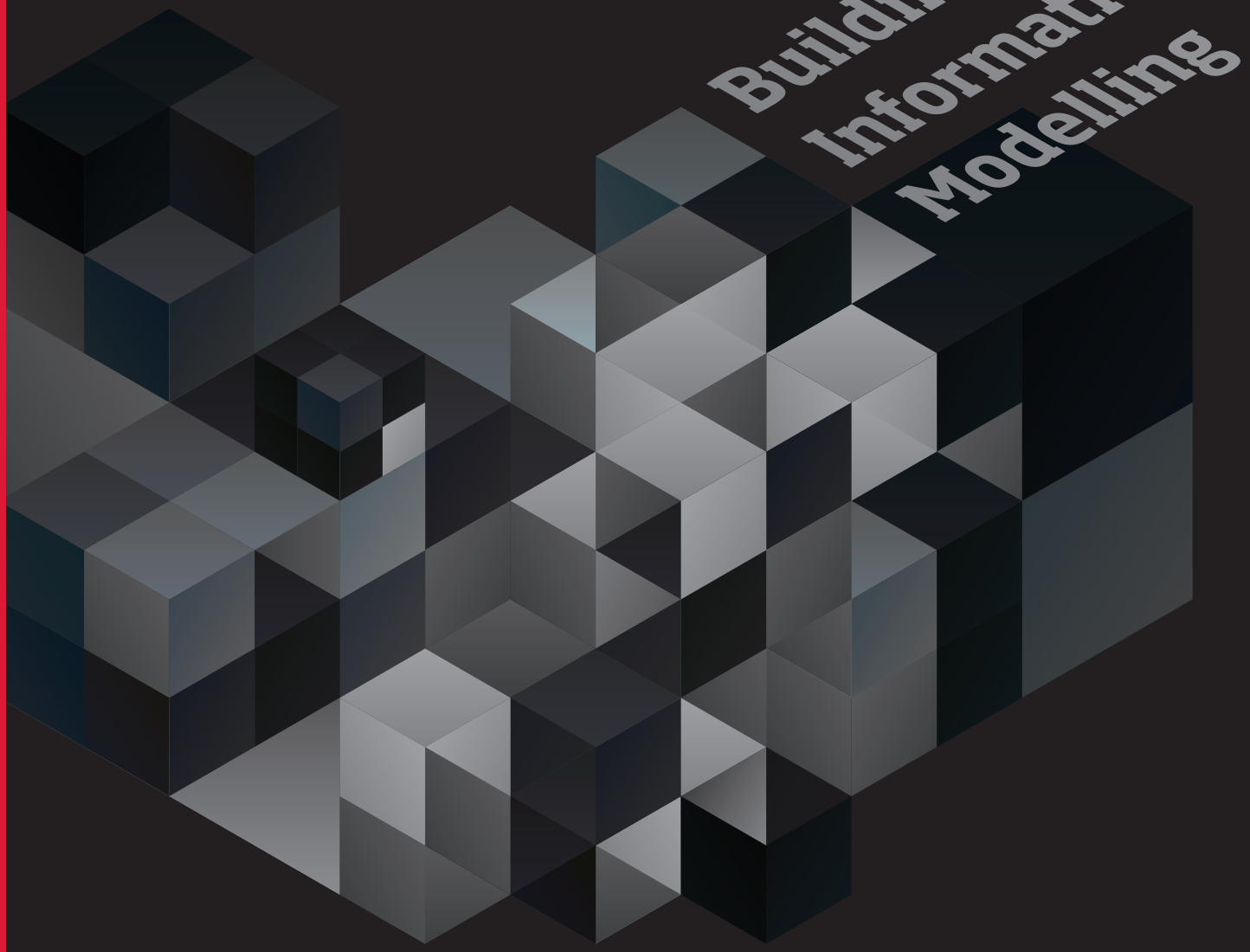
University of Salford MANCHESTER



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Continued from page 58...

and are fit for purpose but also future-proof them for a transforming industry.

BIM is now becoming widespread across the various levels of HE education, albeit ad hoc and without consistency. In the main, this tends to be driven by individual academics or schools/departments that have a particular interest in the area of BIM and recognise its importance in the education of professionals. Over the last few years, a number of BIM specific programmes at Masters level have emerged in the UK. These programmes are experiencing an increase in student numbers and are providing the means by which current industry professionals are retraining or upskilling. Furthermore, graduates are undertaking such programmes in order to increase their knowledge-base in this area and thereby enhance their employability potential.

The construction industry still continues to suffer from a less than favourable professional and low tech image in comparison with other sectors, such as medicine, business, finance, law, ICT, etc. The Construction 2025 Strategy is committed to improving the image of the construction industry by inspiring young people. The industry transformation that is being driven in the UK presents an excellent opportunity to positively influence the perception of the industry. Inspiring young people through education will enable the creation of an image of an industry fit for the 21st Century, which is no longer considered dirty, difficult and dangerous but high-tech, highly professional, and a major contributor to the delivery and management of a built environment that significantly affects the everyday lives of society and to UK economic growth.

Initiatives such as that led by Class of Your Own, are focused on transforming the education of 16-19 year olds by targeting a technology savvy generation of learners through the application of pure subjects in solving real world challenges. A number of BIM-specific BTEC level programmes have also now begun to emerge. While these efforts are making great strides in aligning education with the industry transformation, they may actually be considered too late. Therefore, attracting young people into the construction industry presents a key challenge and requires even earlier targeting (as young as 12 or possibly younger). Such a challenge has to be concurrent with reaching out to the parents of young people in order to influence their perspective of the construction industry as a positive professional career for their children to be encouraged to embark on.

The UK construction industry is at the early stages of a transformation driven by Government commitment and working with industry to provide the required enablers. Already the UK Construction/BIM strategy is attracting attention internationally and offers an opportunity to transform the UK industry to one that is world leading in the digital delivery and management of the built environment. At the same time, if the UK industry is slow on the uptake, the opportunity could not only be missed but exploited by external market(s). A key to the success of the transformation is educating and training both those in the current industry and future professionals. However, in a similar vein to industry, a number of challenges face education providers in changing the face of construction. ■

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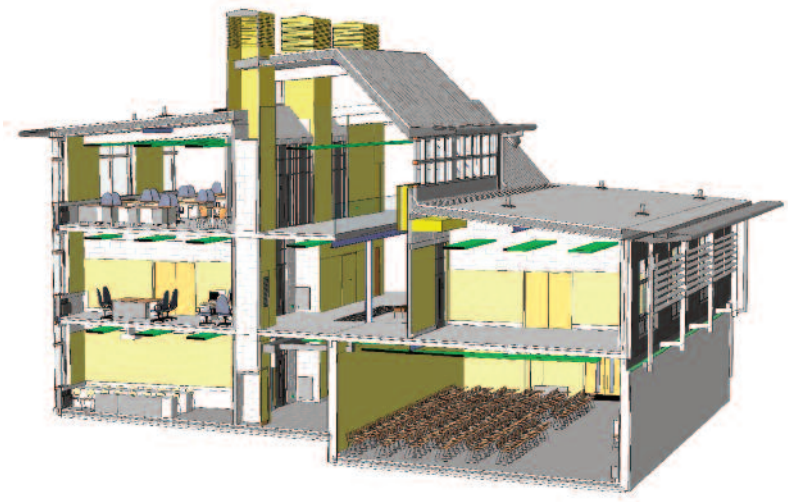
BIM – From Design to Demolition

UWE Bristol launches new MSc in BIM to help meet stricter public construction protocol

Stricter government requirements on managing the building lifecycle for publicly funded projects are being met by the launch at UWE Bristol of a new MSc Building Information Modelling (BIM) in Design Construction and Operations. BIM is emerging as the industry standard approach to the modelling and management of a building's lifecycle, from design and construction to maintenance and demolition. The UK government's construction strategy has pushed forward the programme for adopting it – from 2016, all publicly funded projects will have to meet the BIM protocol. Public sector contracts are worth almost £37bn per year, making up a considerable proportion, 38%, of all UK construction output.



However, lack of education, skills and trained professionals are among the major obstacles to the adoption of BIM in the industry. UWE's postgraduate certificate, postgraduate diploma and master's degree courses in BIM in Design, Construction and Operations aim to respond to this challenge.

UWE Bristol programme leader Professor Lamine Mahdjoubi said, "Since BIM was introduced in the construction industry, it has become a worldwide focus of the construction industry. Many of the world's leading architecture, engineering, and construction firms are on the way to adopting BIM. However the majority of the construction industry is in the hands of small and medium enterprises (SMEs) who are not ready for such a sudden change."

What sets this programme apart is the context of inter-professional and multi-disciplinary approach and expertise that exists in UWE's Faculty of Environment and Technology. Unlike existing postgraduate programmes in BIM, which tend to focus on specific aspects of building information management, such as design or sustainability, this new programme is more holistic in its approach and deals with the whole built environment lifecycle, including design, construction, operation, maintenance, and sustainability.

This unique programme emphasises innovative sustainable and collaborative practices in building information modelling and management. It will be distinctive in offering more employment opportunities for our graduates through the opportunity for work placements with key partners such as Stride Treglown Plc who are currently leading the South West BIM hub, and BAM Construction Ltd.

Keith Wildin of BAM Construction Limited said, "UWE Bristol is unique among education establishments, having recognised that the BIM 'process' is more important than the 'technology.' This approach to teaching BIM will prepare students for working in a co-operative environment that has the potential to transform the UK construction industry by questioning current practices and developing technological knowhow facilitating the BIM process."

Click here to see the video.

Accreditations and partnerships:

RICS

UWE BRISTOL University of the West of England

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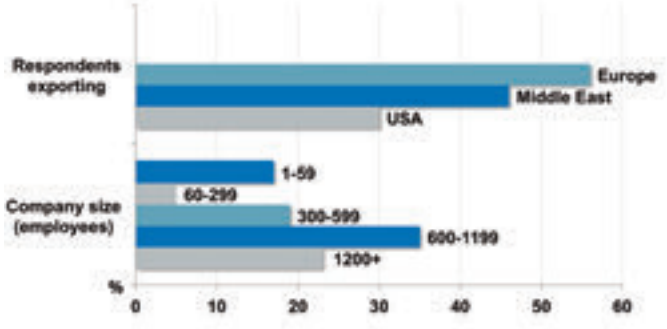
Manufacturing for BIM

Addressing the challenges faced by manufacturers in the BIM process requires that digital product information can be exchanged with supply chain partners. Steve Thompson, Chair of BIM4M2 discusses the support and advice available...

Even before the UK Government announced its intention to require collaborative 3D BIM on its projects by 2016, the construction industry had been busy readying itself for the change to a digital world. Whilst it is clear that the creation, exchange and use of product data is crucial to the BIM process, a common understanding of the type of information that product manufacturers should provide to support BIM has been missing. In March of this year BIM4M2 was formed, with the purpose to support product manufacturers through the transition to a BIM-ready industry, and to provide a forum to share their knowledge.

For me, one of the most exciting aspects of BIM is the willingness of organisations and individuals across the industry to collaborate and work together to address the challenge. Manufacturers have been using digital information and processes for over half a century, but exchanging digital information with supply chain partners is a very different proposition, and one that the sector is eager to tackle. From the preliminary results of the survey of manufacturers that our Promotions Working Group are undertaking, 93% of those responding said they plan to invest in the process (41% already have, and 52% will have by 2016). So, for many the question is less about whether to develop their BIM capabilities, but more about how, in what format and on which platforms? This is where the real challenges lie for the manufacturer, and the answers can be different for every organisation depending on their product types, supply chain routes, markets, regions and scale. However, the basic principles remain the same, to provide structured digital product information that can be exchanged with supply chain partners.

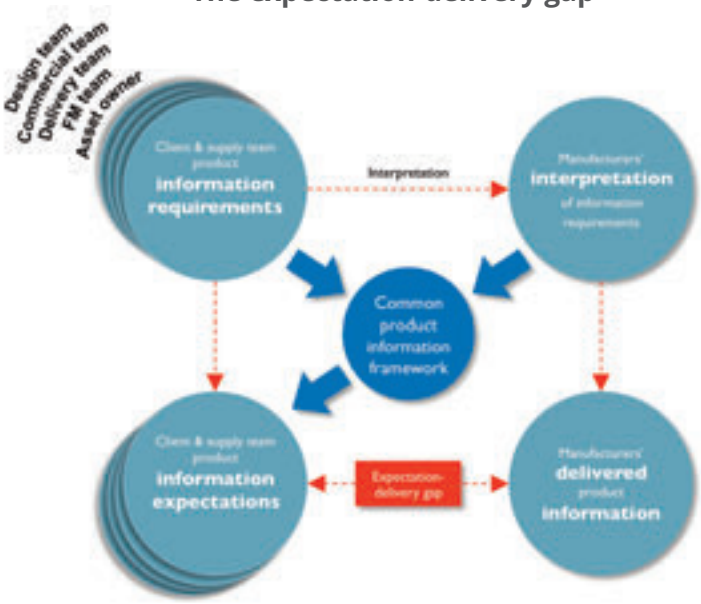
Mix of manufacturer organisation size responding to the BIM4M2 survey, and where they export to



Adding to the complexity is the different information requirements of members of the client and supply chain team on any given project. To find a way through the complexity, we need to work together as an industry and develop an agreed way of describing products and their attributes, both for the UK and internationally. Certainly BS1192:4 (COBie) forms part of the solution as the mandated exchange format for Level 2 in the UK, and the broader Industry Foundation Classes (IFC) are also crucial; but these need to be supported by further definition of what information supply chain partners need and how this can be presented consistently by product suppliers. I'll illustrate this using a customer satisfaction approach.

As we know, on any construction project the client has a set of requirements that need to be met through the delivery of the project, and to support their delivery is a set of information requirements. In the BIM process these are the Employer's Information Requirements (EIR). Added to this, members of the supply chain also need information to deliver the project effectively, and to share with others. In the BIM process these are described in the BIM Execution Plan (BEP).

The expectation-delivery gap



Steve Thompson RIBA, Chair BIM4M2

Without close engagement and accurate definition of what information is required and the level of granularity (element, system, product), there is real potential for a gap between the supply team's expectations on what information a manufacturer provides and what will be delivered: the expectation-delivery gap. With a common framework for product information, supply teams will know what to expect, manufacturers will know what to provide as a minimum, and the gap between expectation and delivery is reduced.

With the development of COBie, the Digital Plan of Work and BS 8541 parts 1-6 in the UK, the gap will certainly begin to close where they are applied. To reduce the gap further the BIM4M2 Data Templates Working Group are working closely with other BIM4 Community groups, clients, professional institutes, trade associations and content providers to develop and refine product data templates to enable suppliers to provide information in a consistent format. There should, and will always be the potential to go further, but the templates will look to set the baseline to support the requirements of a Level 2 BIM maturity.

For those supplying products internationally, a common concern is that in developing structured information or objects for the UK, they will need to create different information for use in every region they operate in. The good news is that with the development of an ISO standard for the BIM process, there is the potential to reduce the differences that exist, and by structuring our information in a common digital format, it makes exchange of information across regions much more straightforward.

Furthermore, the BIM4M2 Education Working Group is developing guidance for product manufacturers on the implications of BIM, and how to develop and deliver a BIM strategy that is fit for their business.

If you would like further information on the group, or to get involved please contact us through our website or on the details provided. ■

BIM4M2

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BIM – where will the product information come from?

The potential impact of BIM on all stages of construction is undeniable. Expectations on the part of clients and other stakeholders are great and growing all the time as experience accumulates and as case studies based on successful projects emerge.

Part of the reason for this is that BIM can best be seen as belonging to a suite of related technologies and new ways of working – such as off-site manufacturing, smart buildings, data management, higher performing buildings – which collectively have been called digital engineering. The impact on how the built environment is designed, constructed, maintained, operated and dismantled or rebuilt will be profound.

Such statements are becoming commonplace and almost taken for granted. Indeed, to illustrate this, the Construction 2025 strategy launched last year is to a large extent formed around the idea that properly implemented, digital engineering will be capable of supporting the industry's need and desire for transformation, to perform at an altogether higher level (33% lower cost, 50% faster delivery, 50% lower impact).

It is becoming clear that as an industry either we already have the necessary tools, or that tools will be developed in the foreseeable future. BIM itself will continue to evolve and we can expect the flow of innovation to continue, but it is also clear that we face a step

Products manufacturers, like Saint-Gobain, carry out extensive testing on their products, both in laboratory conditions and on-site. With access to all this test data, who is best placed to provide high quality BIM datasets?

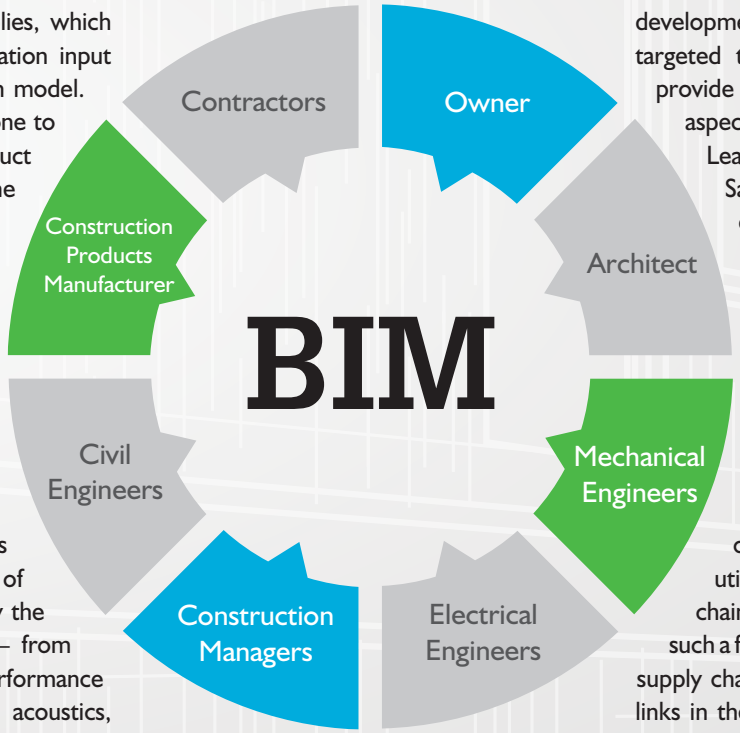
Image showing on-site temperature measurements being taken as part of whole house test programme.

change, or a discontinuity, initially as more of the industry gets on the first rungs of the ladder of this new way of working. It is easy to see BIM level 2, namely forming and using the digital libraries of core information, as representing these first steps. Having addressed level 2 we will need to embrace BIM level 3 and all that that might bring with it, which many observers are expecting to enable the real transformation of the industry which is ultimately sought.

However good and efficient the software tools are, it is easy to overlook the other elements which need to be in place to make the whole design and build process work to actually deliver the quality and benefits expected by stakeholders, supply chain and clients. Some of these elements, such as collaborative working and sharing of information, are touched on in the other articles in this supplement. One specific area, of interest to manufacturers and suppliers like Saint-Gobain, is to do with the data, especially that to do with products, materials and assemblies, which form one aspect of the information input into the building or construction model. A moment's reflection enables one to realise that the library of product information being used by the BIM design tool needs to be appropriate, accurate and up to date, or errors will be hidden only to emerge at a later date in say the build or assembly process, or during operation, which will potentially be very costly to resolve.

As the use of BIM progresses from level 2 to level 3 it is clear that the depth and range of product information required by the designer will continually grow – from dimensional data, to include performance (thermal, structural properties, acoustics, embodied carbon, recyclability etc). Since BIM is not just about working in a different way but it also includes the idea that ultimately the client expects it to contribute to higher performance at a lower cost, then competitive commercial pressures will be brought to bear and will help to shape how BIM is used. To win work the designer will need to have confidence that the optimum design is being offered, in all senses, and that this design can be delivered in reality. This means that the task is not just about the elimination of errors and uncertainty in the raw data, but that the right products are being used and those products have the precise properties (and associated data) sought and assumed by the designer in assembling the solution to be offered to the client. As additional dimensions of data start to be integrated into the BIM model this challenge will only grow.

One solution offered is to use a library of generic product data – using average or typical data taken from across the market of a number of different versions of similar products (insulation, glass, wall linings, structural components, cladding etc). At first sight this solution may appear to offer a way through: a third party takes on the task of collating, interpreting and analysing the data to form a set of typical numbers which the BIM model can then simply connect with and extract. But what are the disadvantages and is there a better way?



In any industry, manufacturers will vie with each other to develop and bring to market more competitive products and solutions. Construction is no exception. In the information-rich age of BIM, an integral part of this improvement process is the dataset associated with each product which will enable competent modelling and design optimisation. The use of generic or average data, of ill-defined ownership, would increase the risk of inaccurate data as well as resulting, in all probability, a sub-optimal design with the consequent risk of it also being less competitive commercially than one resulting from the use of better quality data relating to the actual physical solution being proposed.

Where does this higher quality, more useful, data come from? Manufacturers are in the best position to be able to offer this: they own the raw data for their particular product portfolio; they understand how to use their products in terms of design and installation; they invest in product development to bring to market solutions targeted to address specific needs; they provide technical support services on all aspects of their product or solution. Leading manufacturers, such as Saint-Gobain, are developing the delivery of this information in an on-line format for BIM so that the data is 'live'.

In the digital engineering age – where a building is built twice, once virtually in the BIM model and once on the construction site – product characteristics need to be captured in the form of electronic datasets which can be utilised and relied on by the supply chain. If a product feature is not in such a format its value is reduced. For the supply chain as a whole, and for individual links in the chain, to operate at maximum effectiveness and competitiveness the best quality data, namely the latest live data from the manufacturer, should be used. As digital engineering evolves, and demand for richer information grows, it will become even more critical to use manufacturers' live data.

SAINT-GOBAIN

Ensuring accurate data for BIM projects

The use of BIM is increasing rapidly across the construction sector. By 2016 it will be compulsory for fully collaborative BIM processes to be used on all government projects greater than £5 million in value. The wider industry is adopting BIM as a way to more accurately predict and ensure performance throughout the life of the building; from initial design to operation and even deconstruction. It is suggested that by 2016 over half of UK projects will use the method[1]. In order to get the best out of BIM, accuracy of product and system objects is essential.

BIM can decrease waste, increase the efficiency of building operation and assist collaborative working throughout the design and construction process. The large amount of information which is compiled at the beginning of the project makes the management of the building easier after handover and improves the ability to recycle efficiently at the demolition/refurbishment stage.

Critical to the realisation of the benefits BIM can bring to the construction industry is the use of BIM objects that are current and updated in real time. To support this, British Gypsum launched the White Book System Selector in January this year, which is an online tool designed to help streamline the specification process for construction professionals. It allows specifiers to search and filter through tested British Gypsum plaster, drylining and ceiling system solutions to select the right specifications for the job. Building Information Modelling objects (.rvt), CAD (.dwg) drawings, National Building Specification (NBS) Clauses and product and system datasheets (.pdf) are then available to download for the chosen solutions. This allows specifiers to retrieve important information in a few easy steps. Featuring simple and easy to follow search criteria, familiar to users of the White Book, this tool enables specifiers to filter by a variety of performance requirements, such as fire and acoustics, and be presented with a relevant solution for the job.

The holistic efficiency benefits that the use of BIM can bring to a construction project throughout its entire life can only be realised if accurate data is used, therefore it's vital to include high-quality product information, and where better to get this than direct from the product manufacturer?

[1] Competitive Advantage, Adoption of BIM 2013

British Gypsum
SAINT-GOBAIN

Paul French
Commercial Market Manager
British Gypsum
www.british-gypsum.com

White Book System Selector

Find system solutions and BIM data quickly

Revit BIM files for all our system solutions can be downloaded from our online **White Book System Selector**. This tool works by using performance filters, such as fire integrity or acoustic insulation to search for the ideal solution to meet your project requirements.

It is vital that information contained within a building model is correct, as it will remain with the construction throughout its life; design, construction, operation and deconstruction. A key element to this approach is accurate system and product data, which is why we produce and validate this ourselves, ensuring a precise and reliable solution.

For more information, visit british-gypsum.com/wbssbim or call our Technical Advice Centre on 0844 800 1991.

BIM

British Gypsum
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NFB BIM survey reveals barriers to adoption remain

The 2014 Contractor Survey from the National Federation of Builders indicates an increase in relation to BIM readiness and use, however a number of barriers still remain which preclude full adoption...

In 2012 the NFB published its report BIM: Ready or not? The report was based on an industry wide survey which set out to assess the readiness of the contracting sector with a particular focus on SMEs. At the time, the survey confirmed that the industry had a giant leap to make if it were to achieve the government mandate of BIM level 2 by 2016. Specific barriers to adoption were identified as:

- A lack of information available for companies to make an informed decision about BIM;
- A lack of client of demand;
- A perception of prohibitively high investment costs.

The overall message of the 2012 survey findings indicated that there was a clear gap between the appetite for BIM in terms of the commercial rationale on the one hand, and the knowledge and skills to take action on the other.

In 2013, the NFB launched a second survey to measure and assess the progress made by the sector. The interim results make comparisons with the findings of the 2012 survey.

Respondents were asked what they perceived the greatest barriers to adoption to be. The results indicated the greatest barriers to be a lack of education and training and an unwillingness of industry to collaborate. These were followed closely by the purchasing of software in not only the cost, but also confusion around compatibility across their supply chain. Client demand was still seen as a barrier, with almost half choosing this option. This was

What do you perceive the greatest barriers to adoption of BIM to be? (You can tick more than one box)	**Response**
Lack of industry collaboration	58%
Integrity of information	23%
Education and training	68%
Purchasing of software	49%
Forms of contract	18%
Cost	39%
Liability / risk concerns	17%
Uncertainties regarding ownership of data	30%
Lack of clarification of roles and responsibilities	24%
Lack of expertise / experience	52%
Supply chain	48%
Client demand	44%
Lack of inter-operability between software solutions	28%
Clarity of client requirements	38%

also one of the findings from the first survey which indicates that there is still a lack of client drive towards implementation which may be reflected in the willingness of the industry to adopt BIM. Significantly, regional public procurement is not included in the central government mandate for BIM. The public sector client is very much the driver of BIM at this level but a large proportion of public sector clients simply do not understand BIM and how adoption can be achieved. The NFB's Client Readiness survey, published earlier this year, identified that over 50% of public sector clients thought that BIM should be a core competency, but this lack of understanding provided a barrier to both demand and adoption of BIM within this sector of the industry. The lack of a mandate at this level is resulting in a slow and fragmented uptake and without the demand from clients, contractors can be reluctant to make the financial commitment to training or the development of a strategic approach to BIM.

In order to gauge general understanding of BIM, respondents were asked what they perceive BIM to be, and whether they understand what it means for their projects. Respondents provided answers to more than one option for this question, with 83% of respondents indicating that they understand BIM to be a collaborative process, clearly indicating that BIM is now perceived to be more than 3D drawings and software amongst contractors.

In the 2012 survey, 43% of respondents stated they did not perceive BIM as a core competence within their business, however in the 2014 survey this increased to 76%.

A large number of contractors indicated in the earlier survey that they were not planning to train their staff or were waiting for BIM to standardise. Over half now stated that they had or would be organising training and a third that staff will be attending free events. This is a positive finding with only the minority waiting for practices to standardise or not train at all, again highlighting that industry are progressing with the adoption of BIM.

The picture generated overall from the NFB's 2014 Contractor Survey indicates that the industry is beginning to see an increase in relation to BIM readiness and use amongst the contracting sector. Many now perceive BIM to be a core competency within their organisation. However, a number of barriers still remain which preclude full adoption of BIM and there is still much work to do if the industry is to meet the 2016 deadline. ■

National Federation of Builders (NFB)
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www.builders.org.uk
www.twitter.com/nfbuilders

BIM – defining better information management

BIM, despite being a small acronym, is a big word in construction. While there has been a lot of hype around BIM over the last few years we see the conversation is starting to shift toward companies asking – what's really in it for me? However, the discussion needs to further evolve to start looking at how BIM can help define and create better business outcomes.

Models are important but they aren't the be all and end of the information revolution – it's the data that's important, and for many in the industry that will still be shared in familiar 2D products like MS Word or Excel.

BIM allows clients, operators and maintenance teams to have all their data for an asset in one place. It allows for meaningful analysis across a wider selection of business information to be carried out rather than making business decisions based upon anecdotal guesses. By combining disparate data sets together – linked around a model of the asset – it becomes possible to review infrastructure data in a much more powerful way and as a result, manage assets better.

Implementing and using shared data sets with feedback of what actually works – proven by hard evidence – will improve design in the future. However, this shift of how we manage information requires more than just using software, it requires a behavioural change. This is the real change that BIM brings to businesses. It breaks down silos and enables individuals, groups and departments to share information openly and transparently. This doesn't mean that all information needs to be shared with everyone all the time – BIM provides the opportunity for relevant information to live in the model and only be accessed when needed.

While BIM has and is continuing to help evolve and change the construction industry the next big step will be harnessing remote sensing and telemetry. Real time feedback on the performance of structures such as bridges and tunnels will allow managers to understand how their assets are actually performing. Automating processes so that out of range figures trigger further analysis or inspections, creates the ability for pre-emptive maintenance to be carried out in a structured way rather than just having reactive or end of life strategies in place.

BIM can mean something different to everyone and that's not a bad thing. But better data sets make for better decision making and help owners, operators, designers and installers work much more efficiently from a position of knowledge rather than ignorance.

Tekla Structures BIM software

We constantly test and develop Tekla Structures and help you to get started with it.

Models created with Tekla BIM software carry the accurate, reliable and detailed information needed for successful Building Information Modelling and construction execution. Welcome smoother workflow to your company with Tekla Structures and constructable models.

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Although Tekla is ready to use, the software is also highly customisable. As Tekla has an open approach to BIM, you can run other providers' solutions and fabrication machinery and still interface with Tekla. Extending and enhancing Tekla Structures is easy with Tekla Open API, the application interface.

Duncan Reed, Digital Construction Process Manager, Tekla

TEKLA®

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DO BIM BETTER WITH TEKLA

With the almost daily BIM announcements by clients, contractors and suppliers identifying their increased efficiencies and greater value by adopting BIM, not to mention the Government drive towards adoption by 2016, Tekla recognise that forming a BIM strategy alongside responding to CE Marking and ISO requirements can seem a daunting task.

We can help with the implementation of BIM within your organisation - advising on making the right business decisions, getting the most from your software and help with workflow procedures to ensure you are ready for the challenge ahead.

For further information on how Tekla can assist with BIM implementation and other consultancy services we offer, please call 0113 307 1200.

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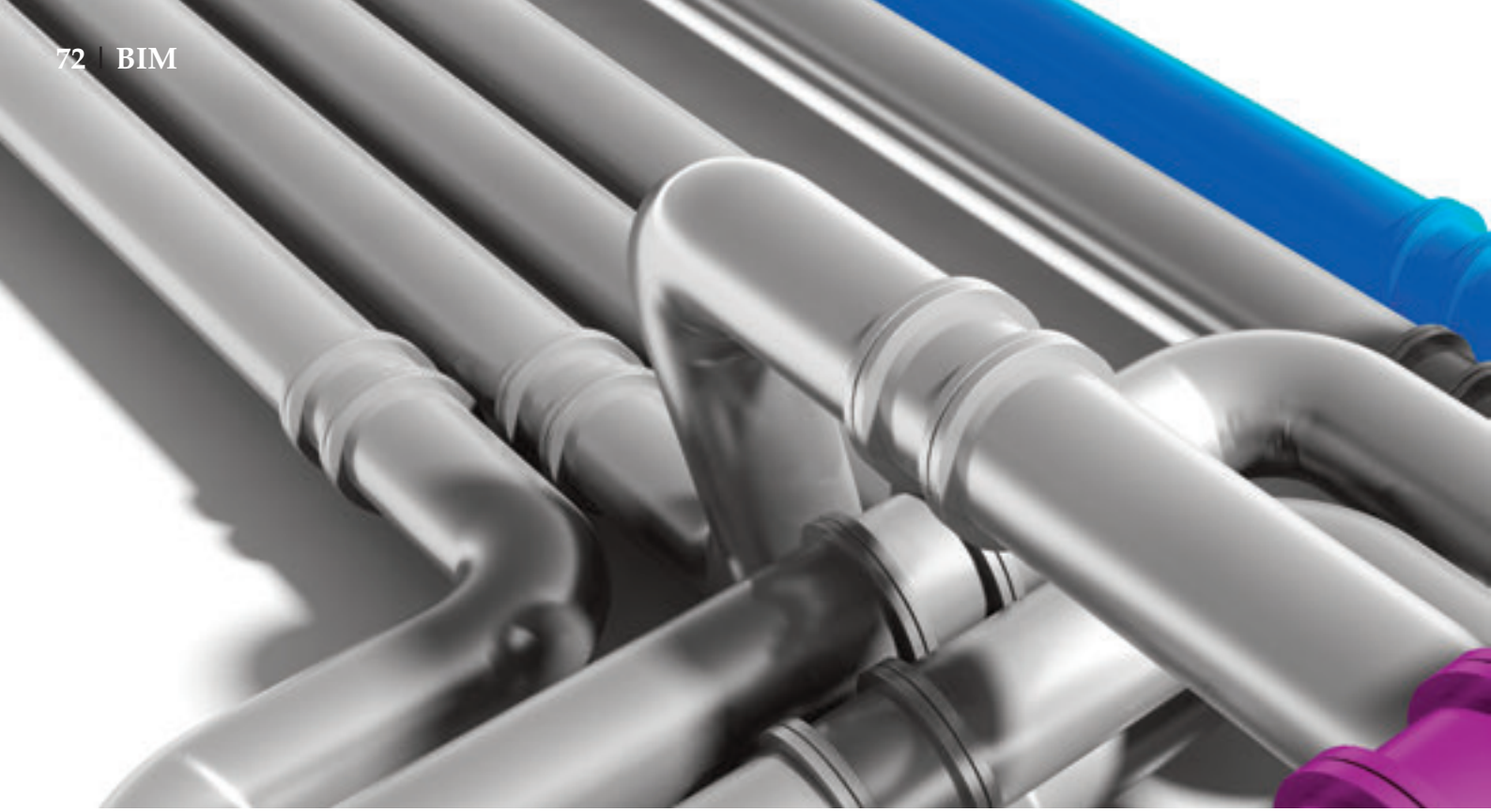


BIM for FM – are we there yet?

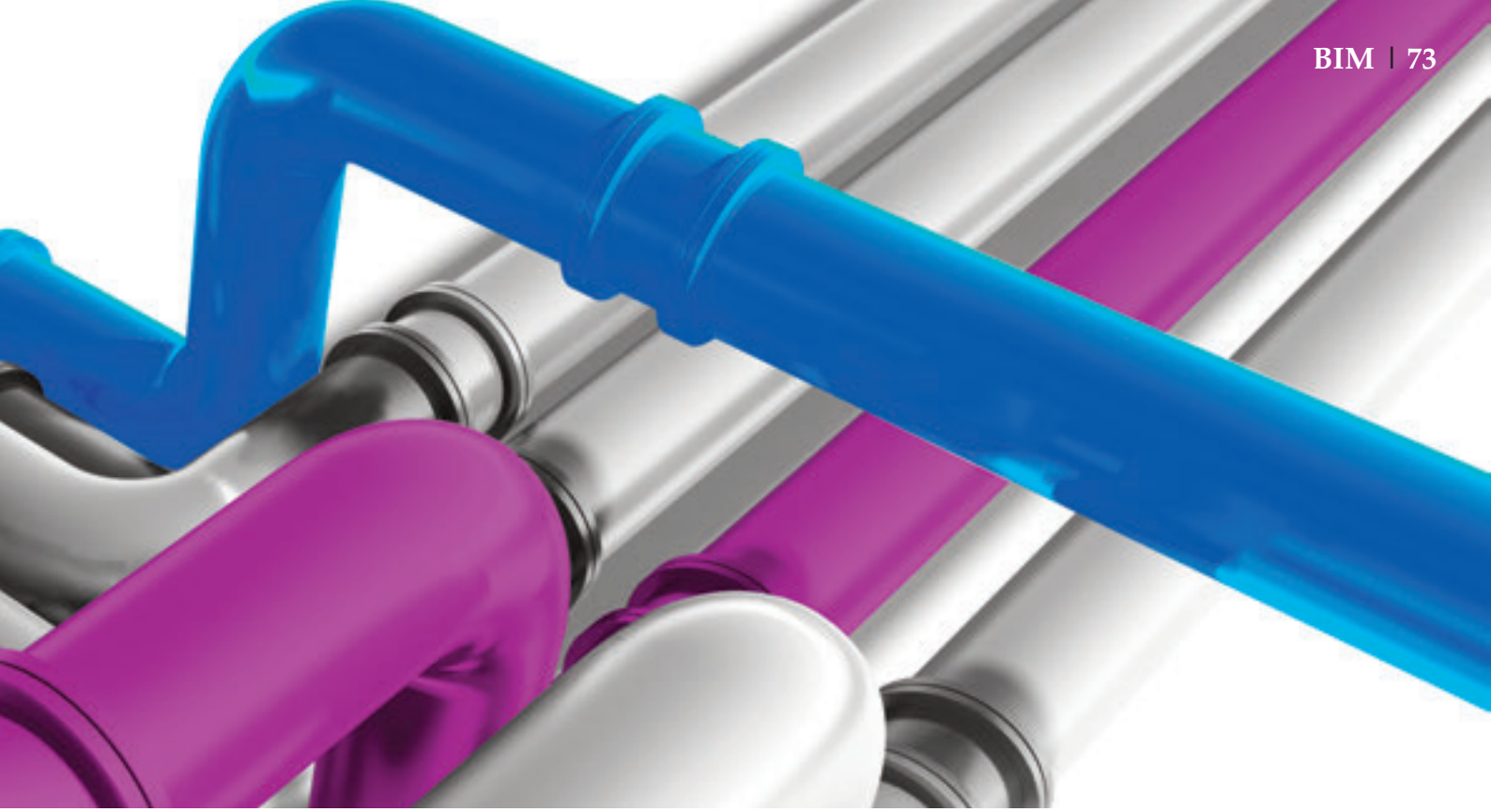
Being involved at the beginning of a new project, and then maintaining this involvement through to eventual handover and post occupancy is key for FM in the BIM process. M J Packham, BIM/Soft Landings Champion at BIFM sheds light on the current situation...

BIM for FM has a certain ring to it and I have to confess that it is very easy to get carried away by the groundswell of enthusiasm that the topic generally seems to engender – particularly amongst our designer/construction colleagues. However, before we get swept away by the BIM tide, it is perhaps appropriate to take a step back to give serious consideration to the potential benefits for FM and, more importantly, how we go about ensuring that these are realised.

Certainly I think that we will all recognise the operational benefits to be derived from BIM in terms of a co-ordinated structure and services installations design. Like me, I suspect that many FMs will have experienced problems with access and general maintenance activities as a result of the structure having "got there first" and the services installations having to be modified on an almost ad hoc basis as a result.

This scenario brings to the fore what I see as being one of the key benefits of BIM, i.e. it provides a mechanism for ensuring collaboration between the respective members of the design/construction supply chain. From a FM perspective we need to ensure that this collaborative ethos also extends to include the operational phase of the built environment that is being created.

This in turn brings into play consideration of the related, but entirely separate, Soft Landings initiative (otherwise known as Government Soft Landings – GSL – in the Public Sector). For those unfamiliar with it; "Soft Landings is the process for the graduated handover of a new building or refurbishment..." So essentially it is about FM getting involved up front in the genesis of a new project and then maintaining this involvement through the various stages of development of design and construction, through to eventual handover and post occupancy evaluation.



The idea being that, in this way, the operational/ occupational phase of the building life cycle – which is by far and away the most significant in cost terms – is always kept under review.

I have wandered somewhat off theme so to return to BIM, one of the other key benefits that I see it bringing to FM relates to the information that gets provided at handover. Again I think that most practising facilities managers will be familiar with the scenario whereby the information they are provided with on taking over new premises is less than perfect – with the net result that they are effectively "flying blind" until the gaps are closed. With BIM this should be a thing of the past. Thus on completion we will – in theory at least – be taking ownership of a fully populated building model that provides all of the asset and service run information required to operate the building at optimum efficiency. Of course all of this lovely information will be in the BIM system and not the CAFM system (or equivalent) which is probably where we really want it. So one of the issues we need to address is how do we get the two to talk to each other in a way that does not involve an undue amount of data manipulation (and hence time/cost). Equally we need to give thought to how frequently we are going to need to refer to the BIM model; once an asset register etc is up and running, I suspect that this will not be as often as some of the BIM protagonists would have us believe.

M J Packham
BIM/Soft Landings Champion

I could go on but I suspect that by now you are starting to understand where I am coming from on BIM. Yes there are a lot of positives for us in FM, but we need to be a bit cautious and not get too excited as there are a number of hurdles we need to navigate before we can expect to fully realise the benefits that it potentially brings. ■

BIFM
ADVANCING OUR PROFESSION

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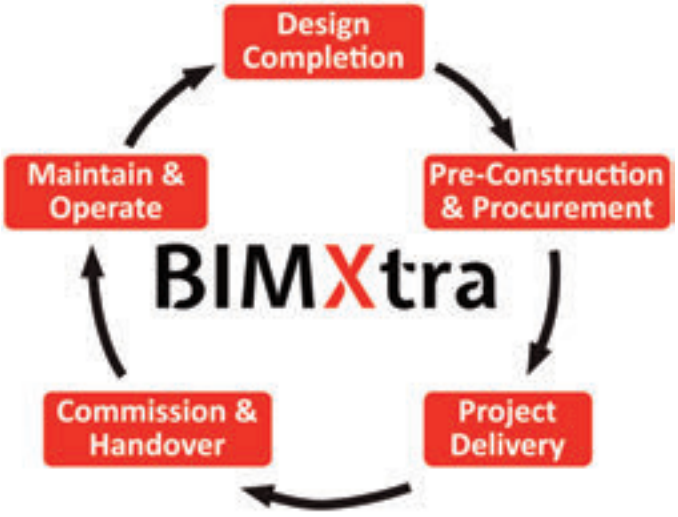
Bringing the simplicity and opportunity of BIM to all

BIM means lots of things to many people and risks being one of the most misused words in construction, however BIM represents the enabler to a transformation that is engulfing not only the UK but also the global design, engineering & construction market; and why, because BIM enables us to work together more easily, in a modern digital environment. Using BIM we are encouraged to share information bringing efficiency and visibility, to ultimately, reduce the risk and cost of our projects. In addition we influence and improve the ongoing operation of our assets, delivering a better more intelligent output for our clients and in doing so providing them with more value in their portfolio of assets.



BIM enables people to interact with their projects in a visual environment, but is increasingly focussing on "the I in BIM", the INFORMATION, which is held within the modelled objects as data. With modern BIM tools, information previously held in separate and disconnected documents, can be created and held within the modelled objects as the central repository for core project information.

Like the automotive industry before us, the efficiency and simplicity of a managed information process contributed to the renewed success of manufacturing. The effect has been that we buy more cars, appreciate the fact that they are more reliable, last longer and cost less to use and maintain – vehicle manufacturing is in new health.

The expectation is the same for the construction industry, allowing us to define and communicate our requirements better, iron out issues before arrival on site, remove unnecessary waste in the process and provide, for the Client, a better service and an intelligent model that can help better manage the clients asset through its operational lifecycle.

Not surprisingly achieving the utopia from this transformation, like all transformations has it's challenges, however, much has been done to address the needs of industry through new technology, and the guidance for the new BIM enabled project delivery process is established in the British Standard and PAS 1192 series, but to maximise the benefits of these new tools we need to consider the working practice changes that are also needed in many environments.

Driven by a focus on low cost procurement that can result in uncertain end out cost and, subject to your position in the supply chain, insufficient consideration of whole life operational cost, together with margins driven ever lower in a highly competitive market we are often faced with risk aversion rather than more proactive risk management.

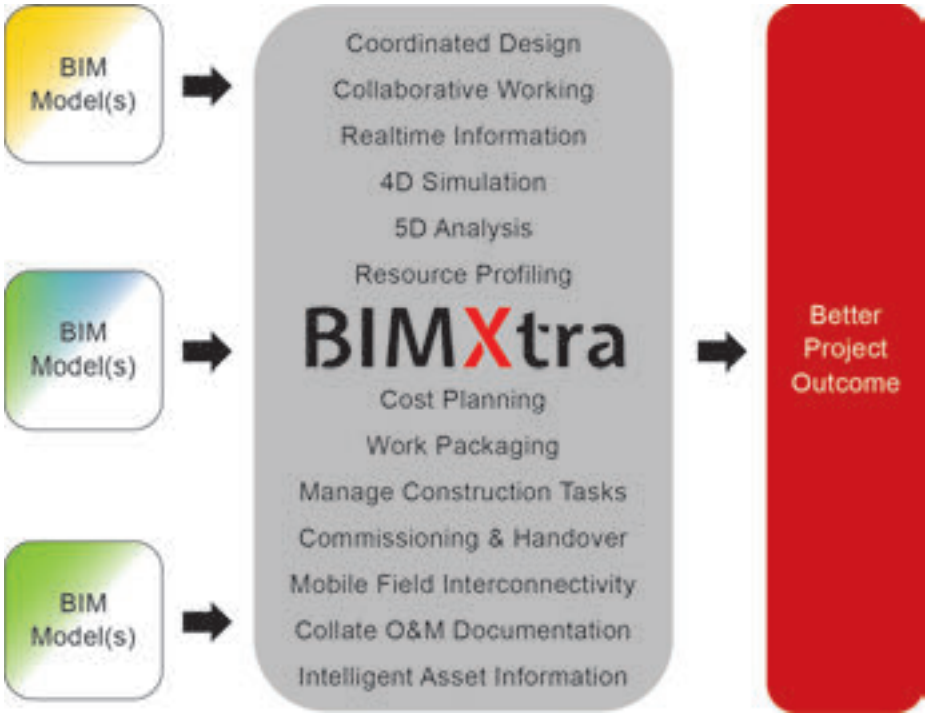
However, in some parts of our industry suppliers and manufacturers are fully integrated with 3D CAD-CAM tools either direct to manufacture or through the creation of fully co-ordinated pre-assembled or pre-manufactured modules that dramatically reduce the onsite work and risks in installation and in doing so provide a higher quality product, manufactured and tested in a controlled environment.

The vision of BIM is that all parties in the supply chain collaborate across the same source of information, and make informed decisions based on better information with an improved awareness of the repercussions on others.

BIM delivers the maximum benefit when all parties take part, the leadership of key Clients like Government, who acknowledge the benefits in project delivery and on-going asset management has been instrumental in establishing BIM as a modern working practice.

The prize for all of us is a better, more efficient, higher quality, world leading industry.

Providing a simple solution to the technology and workflow issues of BIM is where Clearbox can support the process.



Clearbox

Clearbox are a technology provider looking to bring the opportunity of BIM to all through their digital information hub BIMXtra which enables simple access to the information based around a true common data environment. BIMXtra addresses many of the issues of BIM by bridging the gap between the complexity of the BIM authoring tools and the plethora of project tools that characterise the current construction market. BIMXtra not only supports project delivery during the design and construction phase but delivers out the intelligent asset information at handover to provide a new level of opportunity for Facility Management and Asset Management.

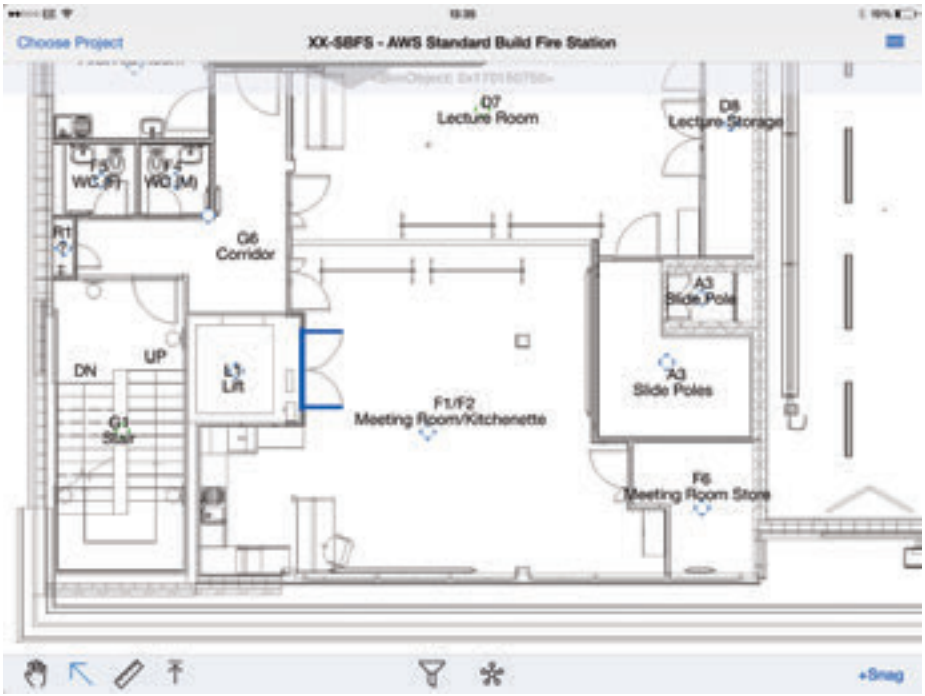
BIMXtra takes information from BIM and makes it available to all in the simplest of approaches. Each user has access to the information they need in the right format at the right time, allowing the influence of BIM to be shared out from the design through the entire project delivery phase. BIM in BIMXtra not only enables interrogation and exploitation of the visuals but also extends and enables the full digital information management of the project.

Developed by individuals with years of experience of delivering design and build projects, and who use BIMXtra tools themselves on their own projects, BIMXtra will help enable consultants, contractors, and SMEs alike to enjoy and benefit from BIM.

So if you are starting your journey or have uncovered some of the complexities of BIM then we can support you to meet the

requirements of Level 2 BIM and beyond as a hosted solution. As 2016 approaches and the gap between the haves and have not's of the BIM world grows there is no better time to jump on board and benefit from the lessons learnt from some of the early adopters.

In this, the first of four articles leading to the 2016 deadline we aim to take you on a journey of the simple functionality that is now readily available, as well as reassure individuals of the benefits of BIM that can be realised in case studies. In the next papers we will address the solutions and some case studies to allow users to appreciate the scale of the benefits and the simplicity and ease with which this can be achieved starting with the interface to programme.



Graeme Forbes

Graeme Forbes is the Managing Director of Clearbox a technology and consulting business that brings years of experience in the BIM space through new collaborative tools that help to bring simplicity to the delivery of BIM based projects.

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Partnering for BIM

Ensuring a smooth and profitable move to BIM relies on partner organisations that can understand requirements and aspirations believes David Dalton at CADSPEC Ltd...

Building Information Modelling, depending on who you ask depends on the answer you get. But what is it really?

The RIBA, CPIC and BuildingSmart jointly proposed a definition of BIM for the UK construction industry:

"Building Information Modelling is a digital representation of physical and functional characteristics of a facility creating a shared knowledge resource for information about it forming a reliable basis for decisions during its life cycle, from earliest conception to demolition."

In practical terms, this means that a virtual building model is developed and information is collated from manufacturers or through traditional decision-making process of design. This model is analysed, tweaked, tested and revised, before the real thing is built on site.

This cradle to grave physical and functional model workflow, whilst being new to the construction industry, has been widely adopted and very well established in the manufacturing industry as Digital Prototyping. Manufacturing companies, due to expanding global competition, were driven to adopt processes which delivered projects to far tighter timescales and at reduced cost, whilst at the same time needing to remain profitable.

The construction industry is now undergoing a similar revolution; projects are under pressure to deliver innovative and sustainable solutions, at far lower costs than ever before.

BIM in the private and public sector

Building owners and operators are becoming increasingly aware of the technology, and given the

potential construction cost savings, are increasingly starting to stipulate the use of BIM workflows and deliverables, not only for the construction phase, but for the building's on-going life cycle and for forward management of assets.

The private sector is forging ahead with BIM adoption, but it is the UK Government's BIM mandate that is really accelerating the adoption of BIM across the UK.

There are many companies that can provide you with a full range of software, hardware, training and consultancy services to ensure a smooth and profitable move to BIM. It is an important aspect to partner with organisations to understand their requirements and aspirations, and this will inevitably result in a successful BIM project. ■

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COBie in the UK

Nicholas Nisbet, Lead Technical Author of the latest BIM standard developed by BSI, and director of AEC3 UK Ltd, talks about the standard's impact on COBie...

COBie (Construction Operations Building information exchange) is a standard format for sharing facilities information. It is designed to ensure that the client gets all the information needed to own and operate the facility in a reliable form.

Informally one can think of COBie as a well-appointed suitcase that allows us to move information from the project team across to the client team. The sides of our suitcase are transparent: anyone can see what is and what isn't yet included: we see slots for all our essentials and lots of free space for our loose items.

So what are the essentials? It's the project, site and the facility itself, the list of visit-able spaces and locations (forget the cupboards), and a list of the manageable components (forget the reinforcement bars). These spaces are grouped into floors and locations, and into zones such as occupancy and activities. The components are organised by their specification (type) and by their functions (systems). Each of these needs a name, description and classification, and a note of by whom and when they were added.

These can then be supplemented with additional loose items such as attributes, document references, contact details, maintenance instructions, and cost and carbon impacts.

The "COBie for all" working group has run through a series of infrastructure scenarios, from simple stations through detailed track and motorway handover, right up to progressive handover of a whole new line. We have found that COBie can do the job: in fact COBie helped resolve some of the casual ambiguities that creep into conventional practice. Some specifics such as the use of Linear Referencing Methods turned out to be not so different to building practice, such as the use of grids in large spaces.

But the importance of COBie lies in its efficiency: neither the client nor the designers/contractors need waste time designing suitcases, but instead can focus packing the correct information. If you want a packing list, then the Employers Information Requirements (EIR) and the forthcoming digital Plan of Work (dPoW) will give the detail. But given the base asset register, the content of COBie is driven by real purposes such as using or maintaining, or operating or monitoring, or repurposing the facility.

Like any good suitcase, you don't always have to fill it all at once: COBie has proved invaluable for client briefing and schedules of accommodation. Later it can contain the Room (and Zone) Data Sheets (RDS). As a progress report, COBie can be used to convey to and from the client, the state of his facility. Product manufacturers often offer COBie in preference over proprietary 3D objects, especially if their products are less likely to be modelled or selected in early stages. So although COBie's primary purpose is to deliver handover information, it can offer the whole UK facilities industry a step into a world of containerised information transport.

It is a required deliverable by 2016 in central government projects where information must flow into portfolio, asset planning and facility maintenance tools. Private clients are already seeing the same

value. Applications such as Revit, Xbim, Solibri and AEC3 are offering tools that help the supply side. Suggestions for generating, comparing and checking COBie are openly available (www.bimtaskgroup.org/labs). On the receiving side, UK CAFM tools are now catching up with US applications and offering COBie support.

Is COBie too difficult (like "long-division" as one critic claimed)? Hopefully not for a mature and accurate industry moving into a data-rich era. Our advice is to use a calculator! Is it too simple ("IFC-lite")? COBie is 100% convertible with IFC and is entirely usable on every computer and smart device, so it is likely to be around for a while yet.

"…although COBie's primary purpose is to deliver handover information, it can offer the whole UK facilities industry a step into a world of containerised information transport."

Where can one learn to speak COBie? There are a number of 10-minute movies on YouTube (search "COBie east"). There are lots of free examples on the buildingSMART Alliance and BIM Task Group websites (search "COBie-UK-2012") and shortly there will be the full British Standard.

In November 2013, a working group of the BSI construction information committee B555 began collaborating on a standard description of the UK use of COBie. The outcome is named "BS 1192-4 – Collaborative production of information – Part 4: Fulfilling employers information exchange requirements using COBie – Code of practice" with the draft for public comment completed at the end of July, when the group reconvened to assess the feedback and make any final adjustments.

Anyone familiar with the earlier "COBie-UK-2012", and the training material available on YouTube will recognise the core content. It takes a holistic view of the built environment, suggesting how facilities including infrastructure, environmental areas and buildings can use the COBie 2.4 schema. It addresses both new-build and refurbishment and so complements both PAS 1192 part 2 and PAS 1192 part 3. The standard offers a clear 'lean' approach to delivering information: first identifying the purposes for which the information is needed, then following through with the implications in terms of which objects, and which attributes. It expects the employer's information requirements (EIR) to at least specify these purposes and allows for the nomination of a detailed digital Plan of Work (dPoW) which should become the acid test for completeness.

At the heart of the UK Government Construction strategy is substantial improvements in the efficiency of the industry. Comparability is at the heart and COBie offers a formal way of transmitting the costs and carbon effects (along with other environmental measures) for the whole facility and for the individual functional systems and occupancy zones. This moves asset data into the heart of strategic asset management and decision making. ■

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The Leica Geosystems BIM Field Trip

Building Information Modelling (BIM) is about transforming how buildings and infrastructure are designed, constructed and operated. It has the potential to add value across all phases of a project, from design through to construction.

BIM exploits the potential of digital modelling technologies to provide a new way of designing buildings and infrastructure and managing the design and construction processes. This approach brings together geometry (lines and surfaces) and rich non-geometrical information (intelligent descriptions of components, materials etc.) in an open data environment. BIM, during the design and construction phases of a project, has the potential to create an 'as-built' virtual model of the built environment, a digital asset that can be exploited throughout the operational life of the built environment.

BIM is a process that keeps projects on time and on budget reducing rework and increasing predictability and profitability. BIM has a solid return on investment with a 40% reduction in field changes, contract savings of over 10% and project time reduced by over 7%.

Whilst BIM adoption is growing positively, the actual level of BIM use is mostly limited to quantity take off, co-ordination of multi-discipline activities at the office, i.e. clash prevention. The use of 'BIM uses' is growing daily, including project management and construction sequencing. The full impact of BIM in the construction industry sector is yet to be realised. There is a clear trend appearing around the uses of 'BIM use' outside of the office.

Moving from 2D plan co-ordination to 3D model co-ordination is usually the first step, this allows contractors to spot and resolve potential problems. However to fully maximise what BIM can do, it is important to connect the digital world to the real world.

Leica Geosystems is a market leader in providing field solutions and is leading the way in helping to bridge this gap by taking BIM out of the office and into the field and vice versa. Leica Geosystems BIM Field Trip is a comprehensive solution with hardware, software, service and support components that increases the BIM benefits for owners, contractors, architects and the various trades involved in the BIM process.

With renovation and retrofit jobs on the rise, Leica Geosystems BIM Field Trip provides the cost-effective, complete and traceable georeferenced field data using a unique class of "Survey-Grade" High-Definition Surveying Systems/3D laser scanners known as ScanStation to produce 3D point clouds that are consumed in a number of software environment through a unified workflow and data architecture. Where projects require the efficient capture and positioning of discrete points, Leica Geosystems family of measurements sensors – from high-end total stations to handheld distos come into play.

Within new construction the BIM Field Trip uses total station and multi-station technology to replicate BIM layout points in the field providing accurate real world implementation. You cannot achieve this kind of efficiency and accuracy with plumb bobs and tape measures, especially with today's complex designs and demanding construction schedules.

The Leica Geosystems BIM Field Trip technology offers a superior quality assurance

solution with innovative multi-station technology that continues construction layout and high definition as-built scanning in a single hardware solution. As-built quality assurance point cloud are compared to the model to assess systems like MEP providing insight critical to validate that buildings are being constructed as designed and evaluating potential issues at an early stage avoids rework in the field.

3D laser scanning/High-Definition Surveying (HDS) as the foundation of BIM

As the equipment and service costs of laser scanning continue to decrease, the opportunity for leveraging 3D scanning in the construction sector is becoming even more tangible. Ultimately the technology of High-Definition Surveying (HDS) changes the way many construction professionals work.

3D laser scanners help to streamline workflows across a number of diverse industries. By allowing critical surfaces and environments to be measured with a level of confidence and speed not possible with traditional tools, 3D laser scanners provide users with a way to deliver robust models that can be revisited digitally at any point in time.

BIM is a 3D parametric model, which means that the objects in the model have intelligence embedded (meta data) and understand a variety of parameters and relationships that are defined by the project team based on the BIM use for the project (level of development). Metadata can be automatically stored in the point cloud file format, or can be linked to the point cloud or the 3D model objects after the measurement process. With this approach BIM can offer virtually unlimited possibilities for integrating business intelligence with the project or asset management.

Today HDS and BIM are technologies that have moved beyond concepts to being proven and demonstrated in projects executed worldwide and the growing capability of technology, allow "BIM stakeholders" to realise further gains through the deployment of such capabilities.

What is most exciting is that we are at the beginning of a fundamental change and digitization of a very old industry and such change promises to deliver greater gains to the full cycle of construction and operations activities to come.

Whether you are a beginner, intermediate or an expert working with the BIM process, the Leica Geosystems BIM Field Trip will help you lower waste, work more efficiently, reduce costs, increase profit margins and maintain greater project safety.

Leica Geosystems

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Taking ownership of a BIM project

Andera Al Saudi, Business Director for The BIM Hub examines the role project owners are taking in promoting the use of BIM...

Building Information Modelling (BIM) is changing the way projects are conceptualised, designed and built. With the recent developments in hardware technologies and the emergence of cloud based computing, BIM adoption is gathering pace as owners, developer, designers, contractors, operators and others in the construction industry look to capitalise on the benefits of using BIM.

Owners are now mandating BIM on projects and though the construction industry is equipping itself with the necessary skills to adhere to BIM requirements, the immediate reaction is that implementing BIM would be costly and therefore outweigh the benefits. Designers add on the cost of building BIM that they need for their design processes, while contractors ask for added funds to recreate models from 2D or 3D models to meet their functional requirements.

Project Managers see managing a BIM project a huge investment in skill sets and time – to understand the BIM data exchange requirements between the project parties. There is an interesting debate within the industry on the amount and quality of data or information being passed on between partners in a project. In the new workflows defined by adoption of BIM processes, designers are often reluctant to offer their Design Information Models (DIM) to the constructors, and are in favour of offering just 2D information.

The industry views this reluctance as stemming from the increased risk related to the design and the fact that they are sharing critical design information. In projects where designers give the constructors the DIM model, the constructors complain about the lack of flexibility and quality of data of the DIM and often develop their own models. Most of the modelling is done without keeping in mind the owner's motivation to use BIM on the project, but just the mandate to use BIM on the project. Ultimately the owner is faced with an inflated cost just to use BIM on the project, with disparate opinions on how BIM should be used. How does an owner confront the challenges and barriers to adopting BIM?

To seek a solution to this problem, owners should first understand the benefits of using BIM on a project. The owner should then identify key areas where his projects will benefit from the use of BIM. The owner cannot expect to gain the benefits of using BIM, by only mandating BIM on the project, but should take the initiative in leading the implementation of BIM on a project. Owners could examine their internal workflows and identify methods and tools that could deliver projects more efficiently.

Role specific training workshops will help designers, contractors, project managers and other project participants understand the specific goals of the project. Reviews of pilot projects could assist in internal data gathering and equip key members of the owner's team to understand BIM, so they can join in leading BIM on the project. Once the owner's team is set up to understand and deliver BIM, different contract types can be explored to achieve the maximum benefits to all parties involved. A trusted BIM advisor can educate the owner's team to understand the implications of using BIM on project team selection, streamline adoption processes and verify that the project team members deliver models in line with data and functional requirements that meet the

BIM specification. A BIM Execution Plan will set up communication and information sharing protocols for project participants, defining data required at various stages of the project.

Most owners try to use BIM to improve processes, both internal and external throughout the entire building life cycle. Owners often tend not to specify in detail the deliverable requirements and specifications. By developing requirements based on well-defined deliverables, owners can ensure that the stakeholders understand and deliver the BIMs to specifications. These deliverable requirements can include BIM Infrastructure requirements, coordination models, schedule simulations, model quality control requirements, protocols for coordinating BIMs, and also requirements of the facility management models. The owner can then basically control the data content and standards in the model, without having to engage in the process.

The owner can use available software to check the model for compliance to the deliverable requirements. The owner has to keep in mind that the data and information in the BIMs should be available in his facility management systems to obtain the benefit of using BIM during the operations phase. Intelligent Building information systems to monitor performance of the building via digital dashboards etc., will draw on the information in the BIM databases to enhance the operations and the performance of the systems. The data collected by these systems can be used to optimise the design of future projects. This ensures that other project participants meet data deliverable requirements while creating the BIMs, offering the owner a complete digital database, whilst also delivering the benefits of using BIM throughout the planning, design, construction and operation phases of the project.

Organisations like buildingSMART educate owners to understand BIM, assist with BIM specifications and work alongside owners as trusted advisors to ensure benefits and return on investment are 'truly' realised on their projects. Using Open BIM, we can ensure that the right project information is available in the right format at the right time to project members, while giving owners an insight into the project health throughout the lifecycle of the project. Further, advice on the right type of contract ensures that project participants share the benefits and risks on the project, thereby creating a collaborative, open project environment. Integrated Project Delivery (IPD) could be one potential solution, with all partners in the project coming on board earlier and defining BIM requirements/specifications earlier in the process.

The industry is still seeking answers to the above problem of defining contracts which share risks and benefits to all involved parties, answering questions like what should be modelled by the designer, what is the level of detail required, and how much data can a constructor re-use from the DIM.

The BIM Hub develops the capacity of people to understand and implement improved policies, enhanced processes and overall a better way of working to shape the evolution of BIM. The BIM Hub showcases the work of leading companies involved in BIM, developing and enabling businesses to benefit from interoperable processes and technology.

Join the BIM community free at www.thebimhub.com today and help shape the future of the construction industry. ■

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We are a consulting and recruitment company who specialise in providing subject matter expertise, resource and services to the digital design & construction industry.

Consultancy

We have been helping clients de-risk their construction projects for nearly a decade by providing high quality consultancy services in the engineering disciplines of Building Information Modelling, Computer Aided Design and Project configuration and Information Management.

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Over the years we have built some great relationships with a large number highly skilled professionals. Our recruitment team has been set up specifically to take advantage of those relationships by providing executive resourcing and recruitment services.

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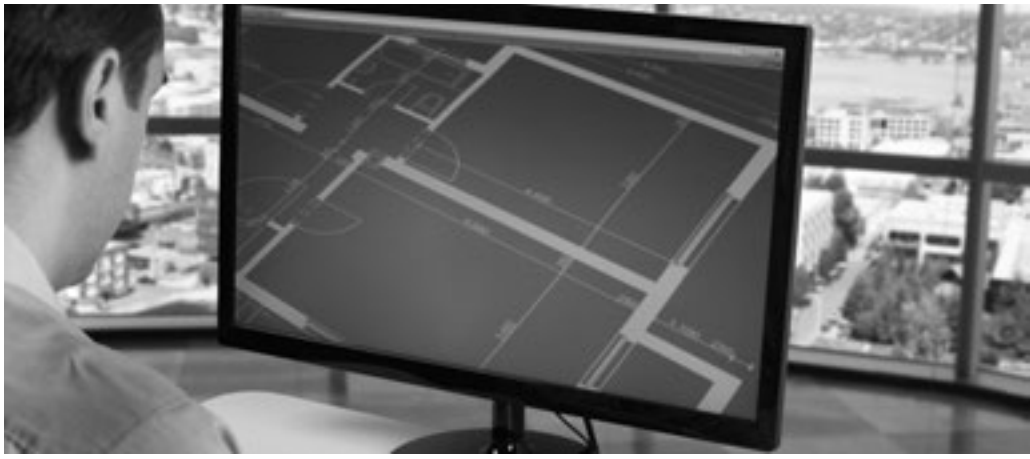

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Putting BIM to work

Building Information Modelling (BIM) has fast become an essential in today's construction industry. The challenge faced by management teams now is to integrate the vast amount of data available in the most useful, accessible way, so that it can support effective decision making.

Back in the 1980s, AceCad Software employed expertise gained in the oil and gas sectors to develop 3D modelling systems for steel fabrication.

The company has now put its sector expertise to use in BIMReview, a software tool that provides an integrated project hub bringing together data from multiple sources across a complete project lifecycle.

"BIMReview enables you to view all your 3D models simultaneously," explains AceCad's Technical Director Simon Inman. "By importing IFC, STEP, IGES, and CIS/2 models, along with API links, it brings together intelligence from all the major BIM authoring products."

BIMReview evolution delivers a range of practical benefits:

- Improved workflow through real-time access to BIM model content across multiple teams.
- Enhanced decision support through improved collaboration.
- Immediate identification of clashes and conflicts.
- Improve planning with 4D timelines for engineering, procurement, suppliers and construction teams.

Because BIMReview enables more efficient working, it has the capability to shrink schedules and reduce the risk of overruns.

"BIMReview is proving to be an invaluable tool because it brings together everything you need to deliver a successful construction project in one easy-to-use desktop application," says Simon Inman.

Low cost, immediate returns

One of the most appealing things about BIMReview is its low cost of ownership. It enables savings in materials, time and money because all of the information about a construction project is in one place. Because the application can be downloaded and installed within a couple of hours, the return on investment is effectively immediate. The intuitive interface means that users don't need onsite training, however, extensive support is available as well as online tutorial videos.

Cost savings from day one:

- Eliminate duplication and over-ordering.
- Better decision making through enhanced information.
- Immediate availability of essential data.

Enhanced workflows

BIMReview is designed to facilitate collaboration across the project. Architects, owners, consultants, contractors, fabricators and engineers can work on a single process through the same model with a level of accuracy not previously possible. When changes are needed, everyone involved has access to all the models and has the information necessary to make the most valuable input.

Improved project efficiency

By providing real-time access to BIM model content and status throughout the supply chain and across dispersed teams, BIMReview enables more efficient working. Those involved in the project no longer have to locate and cross-reference multiple design models in order to properly understand and understand and resolve issues.

Try BIMReview for free

It's easy to use. You can download a free trial of BIMReview or request a free demonstration from AceCad's dedicated website: http://www.bim-review.com/en/bimreview

BIMReview

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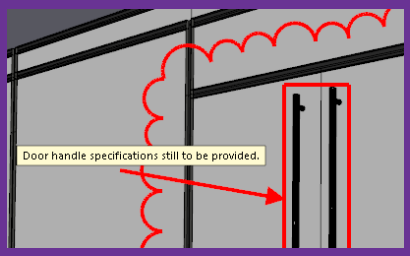
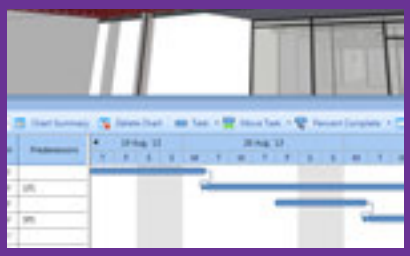


4D Planning



For your **free download** to start saving time, money and resources today:

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BIMReview

Brought to you by AceCad software developing industry software solutions since 1986

NHBC – the value of being registered

NHBC outline the benefits to being registered with the UK's leading warranty and insurance provider...

With recent NHBC registration statistics showing a 28% increase in 2013 over the previous year and demand for new homes growing steadily, confidence is at last returning to the house building industry, and especially for those that are registered.

For builders, there are a host of benefits that come with being registered. The added value to your business is considerable, from technical support and assistance at every stage of development, to research through the NHBC Foundation, and expert guidance for regulatory compliance – building control, health and safety, sustainability, energy services, air leakage, and acoustics.

And continuing the offer from last year, for every new site registered between 1st April 2014 and 31st March 2015, NHBC will continue to provide site boards, flagpoles and flags free of charge, helping to make each site more visible and attractive and demonstrating commitment to working with NHBC's standards.

But the added value doesn't stop there. NHBC has been investing in online and mobile solutions that make managing sites easier and faster. The foundation depth calculator app, launched for IOS and Windows OS in 2013, is now also available on Android. It provides registered builders with an effective field based tool to assess tree types and calculate the required foundation depth as specified in NHBC Standards chapter 4.2.

And to drive future improvements in house building, access is also provided to the ultimate in homeowner feedback data and benchmarking. With over 100,000 customer

satisfaction surveys sent out annually, and an average response rate of around 60%, our survey data is robust and meaningful and gives house builders customer satisfaction insight on an unrivalled scale. Carried out at 8 weeks and 9 months after legal completion, the responses from homeowners are visible to review within 24 hours of feedback via an online portal.

Online solutions also offer something extra for homeowners too. NHBC HUG is a co-branded online tool where all the information needed to move in and run a new home is available at the click of a mouse, and is only available with Buildmark warranty. HUG comes pre-completed with general information, and can then be tailored to the development and individual plot to make a really useful, bespoke home user guide.

As the signs of recovery in the house building industry look ever more positive, NHBC remains a key partner to builders by providing these services and products to help with regulatory compliance, improve customer satisfaction and add value. For a full list of benefits, please see the shaded box below.

For more information on becoming an NHBC registered builder or any of the listed benefits, please visit www.nhbc.co.uk/renewals or call 0844 633 1000 and ask for 'annual renewal'.

NHBC
Tel: 0844 633 1000
www.nhbc.co.uk
www.twitter.com/NHBC

Added value for builders

These benefits are only available to NHBC registered builders:

Flying the flag – a free NHBC flag, flagpole and site board for all new sites registered with us between 1st April 2014 and 31st March 2015.

Help to sell your properties – the iProperty Company, in conjunction with NHBC, has developed an online platform for registered builders to market properties free of charge, and automatically gain a maximum 5 star rating, which will improve its ranking in search results.

Research and guidance – NHBC Foundation provides high-quality research and practical guidance to support the house-building industry as it addresses the challenges of delivering 21st Century new homes.

Technical expertise – all registered builders who are actively building will receive a copy of the printed Standards, the supplementary Technical Extra, a CD copy (on request), and 24/7access to the fully interactive, online version through Standards Plus.

NHBC Building Control – providing building control to the majority of new homes across England and Wales, registered builders receive competitive rates when taking Warranty and Building Control from NHBC.

NHBC HUG – the new Home User Guide provides your homeowners with online access to the information they need to run their home.

Keep up to date with news – free sign-up to the Clicks and Mortar and SafetyNET e-bulletins.

Rewarding excellence – Pride in the Job is the only UK-wide competition dedicated to recognising site managers who achieve the highest standards in house building, and the NHBC Health and Safety Awards are the UK's only health and safety awards scheme exclusively for house builders.

Managing Buildmark acceptance online – accept Buildmark cover online, reducing administration while also saving time and money.

Customer Satisfaction Survey – find out what your customers really think about your work, your standards and your service through an online portal.

COMPLIANCE THROUGH COLLABORATION

We offer a fully integrated multi disciplinary compliance service from a national network of offices. Our mission is to deliver highly professional and technical staff capability to our clients in a way that adds value and removes risk from the compliance process while improving standards of health, safety and sustainability across the built environment.

Please contact us on 020 8253 4900
or email sales@butlerandyoung.co.uk

Our clients enjoy:

- Risk free compliance
- High capability
- Measurable Added Value
- Accessible and reliable service
- Understanding
- Reduced Bureaucracy
- National consistency

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Performance standards to rely on

Paul Wilkins, Chair of the ACAI outlines what standards apply to organisations delivering building control and how these can help the customer...

The Association of Consultant Approved Inspectors for the private sector (ACAI), along with Local Authority Building Control for the public sector (LABC), are working together to explain the performance standards expected of all building control bodies in England & Wales.

As Chair of the ACAI, it is part of our remit to raise the profile of building control as a service that is valued, and will continue to support objectives and initiatives that encourage best practice and cooperation across both the public and private sectors.

Building control bodies work with the Building Regulations which provide a flexible set of national standards for building work covering all projects from major new commercial developments and new homes, to extensions and home alterations. At their best, building control bodies provide a proactive and valued solution to help designers and developers demonstrate compliance with the Building Regulations.

However, because a competitive dual system of building control exists in England and Wales (public and private sectors), successive government ministers in both countries have maintained an advisory group to measure performance. The Building Control Performance Standards Advisory Group (BCPSAG) sets and measures the standard of service provided by these building control bodies each year. This is now a sub-function of BRAC – Building Regulations Advisory Committee – which is a non-departmental, industry-based, advisory group sponsored by the English and Welsh governments.

A new article describing the performance standards applied to building control organisations, and explaining how these affect customers is now available on the website of the representative body for ACAI, LABC, the RICS, CABE and CIOB – the Building Control Alliance (BCA). The article is also available on our website and explains how customers can use these standards as a way of evaluating, short-listing and comparing building control bodies for their own work.

Market feedback shows that building control rates are very competitive without a wide range of pricing. But, quality, competencies, delivery and management vary much more widely. Customers can use the standards to understand how best practice should be delivered, but more importantly, the standards exist to help evaluate the existing or proposed relationship with a building control partner or used to compare services.

There are nine key BCPSAG standards.

1. Policy, performance and management system
This means every building control body should create and publish a business policy covering the promised support and service levels to customers. This includes legal obligations in achieving compliance. In addition, the organisation should have a Quality Management System for recording and measuring delivery that is available to customers to analyse.

2. Resources
Having promised support and service levels, building control bodies should demonstrate that they possess the resources and competencies to deliver these promises on all categories of work undertaken. It's important to check if the building control provider has the experience or professional knowledge to work on all categories of building work, with sufficient surveyors possessing the right competencies to support a new project.

3. Consultation
Building control bodies should set out how they will undertake all statutory consultations in a timely manner and how the observations of consultees (eg fire services) should be communicated in writing to the customer. Ensuring a robust process is in place that will complete these consultations is a key requirement.

4. Pre-application contact and provision of advice
This enables building control bodies to explain how they will work with customers during the early design process to provide feedback on plans, compliance, innovation and affordable solutions. It includes the provision of a named 'account manager' to ensure continuity of thinking throughout a project. Pre-application design advice on compliance is a vital area of cooperative feedback and innovation, and again raises the profile of the industry.

5. Assessment of plans
Building control bodies have to demonstrate how, when assessment of plans is undertaken, they will communicate feedback on compliance issues and the views of statutory consultees including any conditions pertaining to the approval or passing of plans. As 'plan checking' is a vital area of feedback that can save money and time during construction, it's advisable to ask how much feedback will be received from whom and what experience they have.

6. Site inspection
Building control providers must state how they will determine and agree a project service plan with customers, what will be covered, when, and inspected. Additionally, they should explain how notes will be made and recorded together with an explanation of how contraventions will be communicated and resolved. Customers should understand what level and frequency of site visits will be received from the service plan quote (tender/proposal) provided by a building control body. For example, what happens if site issues are found or problems occur during construction requiring more inspections?

7. Communications and records
This covers the provision of notices, written records, documentation and certificates plus their storage in a retrievable way for at least 15 years. Local authorities and approved inspectors operate under different regimes so customers should understand the policy of the building control body appointed.

8. Business and professional ethics
This is a commitment from building control bodies to respect the codes of professional practice governing individual professionals. Customers should understand that professional codes do apply and that conflicts of interest or matters of principle can arise even though it's rare. The ACAI, BCA, LABC, and the professional bodies (RICS, CIOB, and CABE) all support arbitration and mediation.

9. Complaints procedure
Finally, building control bodies must have an easy-to-find and user-friendly complaints process, including onward access to industry mediation. Any complaints made should be recorded and resolved pro-actively.

The ACAI fully supports the BCPSAG standards in our continued push toward higher service delivery, and would urge potential customers to utilise those standards in their projects. In this way, wider industry can be assured that the building control profession delivers the best possible services. ■

Useful links

https://www.gov.uk/search?q=BCPSAG

http://wales.gov.uk/topics/planning/buildingregs/bracw/building-control-performance-standards-advisory-group/?lang=en

http://www.buildingcontrolalliance.org/

http://www.labc.uk.com/

http://approvedinspectors.org.uk/

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Responding to the Skills Shortage

As the UK building industry starts to recover, both materials and skills are in short supply. With the Building Control profession now split across both the ever shrinking public sector and private sector providers, investment in training in recent years has been mixed, and with surveyors leaving the profession through retirement it is becoming increasingly difficult to meet both client expectations and the demands of ever more complex regulatory requirements. Experience is key to support and mentor the next cohort of surveyors and to work proactively with clients to deliver compliant and efficient buildings.

Salus have been able to buck this trend and have recently made key appointments across our portfolio of 9 regional offices. Martin Taylor formerly the Head of Development & Regulation at Solihull Metropolitan Borough Council and Technical Sales Director with LABC has recently joined as Regional Managing Associate based at our Head Office in Leicester. Martin will provide managerial resilience and support our key clients across the midlands and north regions. Graham Mills fulfils a similar role across the south and London. Between the three Directors who set up the company over 12 years ago, Graham and Martin there is over 100 years of Building Control expertise at a senior level across both the public and private sectors.

Other successful appointments include Andrew Wignal as Managing Associate in our East Midlands office in Corby. Ralph Ellis and Jason Lee will soon be joining Salus as project managers in our Wirral and Hendon offices with Paul James and Nigel Dawes joining as project managers in our Leicester Head Office.

Being so successful in our recent recruitment is testimony to our loyal client base and our ability to offer project managers a broad range of interesting projects. To build in further resilience Salus have just launched our graduate scheme to support the next entrants into the Building Control profession.

Salus support all clients by providing a project management approach, appointing each client a project manager to ensure consistency of interpretation from initial design concepts through to final certification of projects on site. Salus do not employ ad hoc inspectors, all staff are based at one of our nine regional offices where we can engage with our clients host CPD events and ensure that a seamless site and office based service is provided.

Delivering compliant buildings is becoming ever more challenging, having a dedicated team of fire engineers allows Salus to offer alternative routes to compliance by varying design solutions to deliver creative buildings. We can also support clients to satisfy the requirements of the Regulatory Reform Order by preparing Fire Risk Assessments and by supporting and guiding the responsible person.

Salus welcome early involvement in all projects and are happy to provide initial advice and guidance on any project without obligation.

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Salus Approved Inspectors, licensed through the Construction Industry Council to Act as Corporate Approved Inspectors, operate a no nonsense approach to construction projects & the legislative expectation to ensure compliance with the Building Regulations.

Every client is designated a project manager to ensure a consistent interpretation on each and every project we undertake throughout England and Wales.

This is supplemented by our duty to inspect projects on site and fulfill the rightful expectation of the Building Control Performance Standards, which we fully support.

Salus does not employ ad hoc site inspection personnel and all our staff are based within a regional office, one of which will be selected to cover your project.

Fire Engineering

Fire Engineering continues to develop more and more as buildings become increasingly unique in terms of size, shape and occupancy. We will develop Fire Engineered solutions to allow designers flexibility by using modern science and established solutions.

Fire Safety

Drawing upon our vast experience and knowledge of Fire Safety, we can take on a Risk Assessment role on behalf of clients and following a detailed site Risk Assessment, we will produce a qualifying report of issues relevant to meeting the expectation of the RRO.

For further information or to arrange an informal meeting please contact:

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Basement failure – Water ingress into below ground bedroom during the remedial scheme, following removal of plasterboard and screed

A boom for basements

The boom in basement construction has uncovered areas of concern. Marc Separovic, NHBC Technical Projects Manager discusses the issues and how designers can overcome construction and waterproofing problems...

Basement projects remain a cause of concern in the house building industry. With the current inflation in house prices, and limited availability of land, there is no surprise that more developers are extending below ground. It is not uncommon in large houses to extend three storeys deep below ground, creating the new era of 'Iceberg' houses, potentially doubling or even trebling floor areas to maximise returns. This boom of basement construction has uncovered several key issues, mainly: poor workmanship, health and safety and planning issues.

The HSE has experienced an alarming manifestation of basement construction health and safety issues. As a result of the concerns, the HSE has initiated several inspection blitzes on basement sites across four London boroughs over the past two years.

The inspections have resulted in a third of basement sites failing health and safety spot checks, resulting in enforcement action. However, despite the clear evidence that domestic basement projects remain a cause for concern, the HSE's lead inspector for the initiative believes some progress is being made.

The local authorities, especially in our major cities, have also experienced an influx of basement planning applications, and subsequent issues. In the Royal Borough of Kensington and Chelsea, planning applications for basements rose from just 13 in 2001, to 182 in 2010, and to 307 in 2012. In March 2014, the London Assembly unanimously agreed a motion to take action to limit excessive subterranean developments across London. The Royal Borough of Kensington and Chelsea appear to be leading the way, with significant changes proposed to their

planning rules, limiting domestic basements to single story below ground level, and a maximum of 50% of any rear garden.

"…despite the clear evidence that domestic basement projects remain a cause for concern, the HSE's lead inspector for the initiative believes some progress is being made."

In 2013, NHBC, the leading insurance and warranty provider for new homes in the UK, launched a basement campaign that highlighted a number of workmanship issues. Between 2005 and 2013 basement claims cost NHBC in the region of £21m affecting around 890 homes. With the frequency of basement claims to registrations occurring 1600 times greater than foundation related claims, there is a significant challenge to ensure the quality of build. NHBC has been working with key figures and organisations from the sector on various initiatives to address the problems; one of these initiatives includes implementing a new basement chapter within the NHBC Standards to be delivered in 2015. This new chapter will provide practical guidance for structural waterproofing and the construction of basements. ■

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A basement checklist

Given the past failure rates, the current boom, and the impending reform, the basement industry has a significant challenge ahead. So as designers what can we do to help reduce risk and raise standards? Key areas are discussed below:

- Be satisfied that the chosen water proofing system is suitable for the performance grade in question and level of risks involved;
- Ensure that the extent of additional investigations specifically required for the assessment of ground conditions, water levels, and design of the basement construction reflects the level of associated risk involved;
- Check that all critical construction points within the chosen water proofing system have been suitably detailed prior to construction;
- Satisfy yourself that the contractor is competent to install the system in question;
- When value engineering ensure that the water proofing system is not compromised, and still reflects the level of associated risk involved;
- Only use products/systems that have current independent certification or that are of equal or better level of assessment;
- Keep up to date with basement guidance & legislation – NHBC CH5.4 (due 2015), new planning requirements (due imminently), and The Basement Information Centre New Guidance Document to replace AD Basements for dwellings.

A best-in-class BIM Toolkit

NBS have been awarded a contract to complete level-2 BIM for HM Government with a free-to-use toolkit as outlined here...

A team led by NBS has won the £1m Technology Strategy Board contract to take forward development of the Digital Toolkit for Building Information Modelling (BIM). The BIM Toolkit has the potential to transform the procurement of buildings and infrastructure by defining and testing the BIM data required at each stage of the project.

The award follows a two stage competition to examine the feasibility of the project, which will deliver the final two elements of the standards and guidance being provided by the UK Government. This free-to-use BIM toolkit will make available a digital plan of work and a classification system which incorporates definitions for over 5,000 construction objects at each of the delivery stages throughout the life of a built environment asset.

The NBS team which includes BIM Academy, BDP, Laing O'Rourke, Microsoft and Newcastle University, conducted an in-depth research programme with the industry to test its proposals for a free-to-use digital BIM tool that will capture, validate and store information based on the publicly available Level 2 BIM standards.

A series of workshops and focus groups were held with leading manufacturers, clients, project managers, designers, constructors and operators to ensure that the design of the toolkit satisfied the cross-industry need.

A series of working prototypes have been produced which include a cloud computing demonstration harness and an IFC verification tool. The bid includes a commitment to complete Uniclass 2 which will be developed as the UK's unified classification system based on international frameworks.

Level 2 BIM, is made up of a number of components as defined by the BIM Task Group. Many of the standards and guidance documents have already been developed; now this project will deliver the final two pieces of the jigsaw. With the UK market for BIM-related services estimated to be an annual £30bn by 2020 and UK-based firms already exporting £7bn of architectural and engineering services, taking a leadership position in developing BIM will provide strong potential for further export growth.

Stephen Hamil, Director of Design and Innovation at NBS said:

"Delivery of a best-in-class digital toolkit that completes Level 2 BIM is a vital component of the Government's strategy for the construction industry which will deliver huge benefits.

"We are looking forward to working with the BIM Task Group to build on their achievements particularly with regards to industry engagement and thought leadership."

The project is anticipated to deliver the first phases of the toolkit in the spring of 2015. ■

For more information about the project and to register your interest in partaking in BETA testing or regular updates, visit www.thenbs.com/bimtoolkit.

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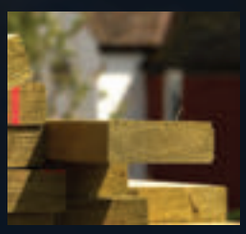

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An accessible agenda

Recognising and addressing the increased demand for accessible buildings in the UK is highlighted here by Dr Roberta Blackman-Woods – Shadow Communities & Local Government Minister and Kate Green – Shadow Minister for Disabled People...

In May I attended a launch event for a new bungalow complex in my constituency in Durham. The development included six new affordable homes for over 55s, two of which were designed to be fully accessible for wheelchair users. But all of them had been designed with a generous internal space, flexible layout options, private gardens and parking to accommodate anyone with mobility impairments should they arise in the future. The development clearly demonstrated that there is a huge demand for more accessible, affordable housing. However, homes like these are all too scarce.

The government's own figures show that there is a shortage of thousands of accessible homes in the UK, and the Government's Disability Rights Commission reported in 2007 that 70% of families with a disabled child said their housing was 'unsatisfactory'. So it is clear there is still much work for governments to do to help make sure disabled people have full access to, and use of decent quality homes and accessible workplaces.

When in government, Labour made progress in bringing down many of the barriers faced by disabled people, not just in terms of overt discrimination, but also in terms of obstacles to accessing the wider environment and all the opportunities it offers. The last government transformed UK anti-discrimination law through a new Disability Discrimination Act and Equality Acts, which brought anti-discrimination legislation into the 21st Century and delivered real improvements in disability rights in particular.

We also left a legacy of requiring that all the buildings the public need to access every day, whether residential or commercial, are accessible for all people. This was partly due to a recognition that changing UK demographics mean that more of us will live longer and be more likely to acquire physical impairments as we age. We therefore need homes and other buildings, including GP surgeries, hospitals and shops to reflect our changing needs as a society.

As Shadow Planning Minister, I've taken a real interest in the role the planning system can play in delivering more accessible internal and external environments. The last government introduced part M of the Building Regulations in 1998. These came into effect in 1999 and had the effect of significantly improving disabled people's access to new dwellings. Part M set out guidance requiring new buildings to be safe and convenient for disabled people to access and move around internally. New dwellings were also required to have bathroom facilities on the entrance floor.

Labour also introduced further changes in 2004, expanding the concept of Access Statements, which require architects of new buildings to produce a document outlining what steps were taken during the design process to help ensure that the building would be accessible to all. This helped entrench the principle that we should always build in a way that takes into account the holistic needs of all the people who may be likely to use the building. This represented a more sustainable and standardised approach with benefits to users and planning authorities too, as it also required planning applications to be assessed with the principle of equal access in mind. If a proposed new development failed to demonstrate adequate regard for this principle, planning permission could be denied.

Dr Roberta Blackman-Woods MP
Shadow Communities & Local Government Minister

Kate Green MP
Shadow Minister for Disabled People

Despite all this progress, there is much more to be done. As part of its Housing Standards Review, the current government is now considering whether any new, higher standards may be necessary to meet adaptability and accessibility requirements beyond the measures contained in Part M of the Building Regulations. As new changes are considered, we could look at what measures have been successfully implemented in other countries such as Sweden and Denmark, where building regulations require all new homes to be accessible for disabled people. Their example has been followed by local authorities within the UK, like Brighton and Hove, which is leading the way in requiring that new homes be built in line with the Lifetime Homes Standard. This set of 16 design criteria ensures that all homes are built to be accessible and more easily adapted to meet peoples' changing needs at different stages in their lives. Perhaps most significantly, the Greater London Authority has required all new homes to meet this standard since 2004, but estimates from the current government that a mere 5% of homes outside of London meet the Lifetime Homes Standard show that we need a renewed discussion about applying it on a national level.

During a House of Lords debate in June of this year Baroness Andrews pointed out that one disabled person out of every six is living in unsuitable accommodation today. The debate also reminded us that investment in adapted and accessible homes saves further health care costs down the line. As Baroness Andrews put it, it costs £28,000 to repair a hip fracture, but only £1,800 to put in a stair lift. So we need much more investment in good quality accessible homes that are specifically adapted to disabled peoples' needs, just like the new Sherburn Road development in Durham.

"The government's own figures show that there is a shortage of thousands of accessible homes in the UK, and the Government's Disability Rights Commission reported in 2007 that 70% of families with a disabled child said their housing was 'unsatisfactory'."

I will continue to monitor any further changes the government proposes and I'll continue to press the government on the need for more homes of all types, while also considering the best ways to adapt existing homes to meet peoples' needs and making sure new homes are built to better universal standards. ■

Dr Roberta Blackman-Woods MP
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Labour Party
www.labour.org.uk

Designing to help people live with dementia

Building design can help people with dementia to live safer, fuller lives...

Dementia is gaining recognition as a growing concern within our society. Our experience is that a pro-active approach to building design can make a real difference for people living with the disease.

At About Access we worked recently with local authority Adult Social Care professionals to develop a specialist dementia day care centre and memory clinic for the NHS. Such services require all of the partners involved to address some specific requirements, particularly those which arise when a person's impairment is not always visible.

The signs of dementia include memory loss, confusion, mood changes and difficulty with such day-to-day tasks as washing, dressing and cooking. The fact that these impairments are often hidden makes it all the more important to consider some of the less obvious features of building design.

This broad approach was at the forefront of our strategy as we suggested design improvements for the clinic, which was being created within an existing building, to help all users of the facility but particularly people with dementia.

The level of our involvement varies depending on the needs of our client. We identified the existing barriers to access to the building, not all of which was to be developed, and then compared the proposed design with our findings.

We began by analysing the accessibility for people as they arrived from bus stops, car parks and drop-off points, from the public highway and from routes within the site boundary.

Inside, we studied the various designs of WCs, the doors, the floors and the signage. Having looked at how people enter the building and make their way around we then examined how they leave.

Throughout the process we found ourselves giving detailed consideration to the very specific needs of the increasing numbers of people living with dementia.

Good design will incorporate clues as to how a space is used, or a clear reminder about how to complete certain tasks which many people find straightforward.

Lighting and glare leads us to think about the finishes on surfaces and placement of light sources, for ageing eyes need careful consideration – the glare tolerance of someone aged 70 is about one quarter of that of someone aged 20, and a person aged 65 requires two-and-a-half times more contrast than a 20 year old.

A simple example in a residential scenario might be tap design for WCs, where colour and contrast can be used to highlight and hide certain features. In the street, a similar approach can be used to help people with dementia locate and operate such facilities as pay points.

We are applying our experience to new-build and refurbishments for local authorities, health trusts and private companies.

For further information on how About Access can help you and your properties please contact Ian Streets, Managing Director, using the details below.

For further information on dementia you can visit the websites: www.alzheimers.org.uk and www.alzheimersresearchuk.org

About Access
...for an inclusive world

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A New Model for Affordable Housing

How has a collaborative student-designed project become one of the first of its kind designed to some of the world's most stringent design codes? Stacey Temprell, New Build Sector Director for Saint-Gobain, tells us how the world leader in sustainable habitat paired up with The University of Nottingham on the project.

Stacey Temprell
Residential Sector Director

"The project is the result of an extraordinary journey that provides an exemplar 'zero carbon' solution that is a viable, repeatable family home suitable for the UK housing market of the future."

Nottingham H.O.U.S.E (Home Optimising the Use of Solar Energy) is a full-scale, fully functioning family home that complies with the future Fabric Energy Efficiency Standard (FEES), likely to be the requirement for the 2016 Zero Carbon Homes performance requirement.

The house has been designed to perform at a very low level of energy usage by optimizing both the building's fabric and services to meet the Zero Carbon Hub's FEES and the Government's agenda for reduction of impacts on climate change and fuel poverty.

FEES is the proposed maximum space heating and cooling energy demand for zero carbon homes.

This is the amount of energy which would normally be needed to maintain comfortable internal temperatures. In a dwelling, this can be influenced by a number of factors, including building fabric U-values, thermal bridging, air permeability, thermal mass, external heat gain (solar) and internal heat gains such as metabolic activity or as a by-product of services.

FEES should ensure that a good minimum standard of building fabric (the longest-lasting part of a home) will be embedded in all new homes. It is measured in kWh/m^2/year and is therefore not affected by carbon emission factors for different fuel types. For the majority of homes, levels of 39 and 46kWh/m^2/year are proposed. Nottingham H.O.U.S.E achieves 36kWh/m^2/year on the fabric alone, exceeding fabric standards required under FEES for even an apartment block. With an EPC rating of B, this represents a 46% reduction in CO_2 emissions compared with Part L 2010 Building Regulation requirements.

Saint-Gobain contributed a range of products and systems selected for their appeal of minimizing total energy consumptions and maintaining an inexpensive structural scheme, as well as assisting the students with the specification of the house and providing technical support.

Find out more about the Nottingham H.O.U.S.E project by visiting:

http://www.saint-gobain.co.uk/university-students-zero-carbon-house.aspx

SAINT-GOBAIN

The benefits of certification

Dave Hall, Technical Academy Manager at British Gypsum, explains how a combination of independent product certifications and high quality training can help specifiers achieve their individual project requirements.

When selecting materials for construction projects, specifiers have a wide range of solutions to choose from, with many providing particular technical characteristics, to meet regulatory requirements, for example around thermal insulation performance.

This offers a great deal of choice, but can make it difficult to make an informed, confident decision. So how can specifiers be sure that the products they select offer the performance they need, and the contractors they work with are competently trained to fit them?

A mark of quality

To help make it easier for specifiers to identify the best performing solutions, manufacturers have long sought out certification from organisations like the British Board of Agrément (BBA). Recognised across the industry for its approval and inspection services, the BBA independently verifies that construction materials and systems are fit for purpose. Furthermore, systems for use in Green Deal and Energy Company Obligation (ECO) projects must be certified by the BBA.

Manufacturers with certified solutions are subject to regular review to ensure they continue to meet the BBA's stringent standards. As a result, selecting BBA-certified products can help specifiers make confident choices, streamline the selection process and minimise the risk of performance issues in key materials during the construction stage and in use.

British Gypsum has a range of BBA-certified solutions available for specifiers. The Gyproc ThermaLine PIR plasterboard range is the latest of the manufacturer's products to be added to its systems certification by the organisation, demonstrating that it offers high thermal insulation ideal for upgrades to solid wall buildings and room-in-the-roof projects. British Gypsum systems certified by the BBA include its DriLyner RF and DriLyner TL systems, as well as its GypLyner UNIVERSAL and GypLyner IWL solutions.

High-calibre training

However, certification is just one factor in ensuring that materials are fit for purpose. The performance of even the highest quality certified materials can be impaired by incorrect installation, and lack of detailing during construction. Given this it is important that there is support and guidance available from manufacturers to support installers in fitting systems and products correctly. To help, the BBA not only accredits installers through its Approved Installer scheme, but also certifies training schemes by manufacturers. These can provide installers with the skills they need to ensure that fitted construction materials meet specifiers' performance requirements specifically around minimising thermal bridging and reduced air leakage in the finished building fabric.

British Gypsum provides in-depth training in the installation of its BBA-certified wall insulation systems to help ensure solutions are fitted correctly through the Saint-Gobain Technical Academy network around the UK, with centres in Kirkby Thore, Flitwick, East Leake, Erith and Clevedon. The manufacturer has also had all of its internal wall insulation training approved in content by the CITB in meeting the national occupational standard for building insulation treatments – internal wall insulation, which focuses on equipping installers with the knowledge to fit materials in compliance with the Green Deal's strict requirements.

Reassurance

New construction solutions are coming onto the market all the time, so it is important for specifiers to be able to identify the most appropriate products for their project. By using BBA-certified systems and installers trained in BBA-approved schemes and endorsed by the CITB, they can be confident that their finished development will offer a high-quality comfortable indoor space for building users that meets project specifications. In addition, British Gypsum offers SpecSure® lifetime system warranty on all its systems, meaning they have been tested in UKAS-accredited fire, acoustic, and structural test laboratories.

British Gypsum
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Energy efficiency the Passivhaus way

The Passivhaus standard is proven to reduce energy bills and ensure clean internal air quality, qualifying it as a desirable method for our future housing stock as outlined here by Chris Parsons, Director of Parsons & Whittley Architects and Passivhaus member...

Passivhaus seems to be on everybody's lips, but what is it and what does it mean for planning and building professionals and the future of our housing stock?

Passivhaus is primarily an energy and comfort standard. It is a methodology used for designing buildings which closely examines the physics behind the performance of our buildings and it is not, surprisingly perhaps given the name, limited to housing. Passivhaus schools, offices, hospitals, hotels, even an archive store have all been built using the standard. It is perhaps in housing though, that the standard can make the most impact on the problems of fuel poverty and carbon emissions from our building stock.

Passivhaus is not a system. It is not proscriptive and does not require a specific construction typology or method. They have been built from traditional masonry, timber frame, straw bales, sips panels, laminated timber and many other systems. This is because the standard only requires that the building performance achieves certain targets, low ones of course, but how to do it is free. This in turn allows designers to properly respond to context, constraints and opportunities and it does not require a sea change in the appearance and feel of our built environment.

The standard is achieved through accurate modelling of the design in special software with a proven accuracy record, to ensure certain performance criteria are attained. This ensures a holistic approach to the overall performance of the building fabric and services. It also avoids an over reliance on renewables, instead concentrating on reducing operational energy requirements to about 10% of the average UK dwelling.

Of course, some things are necessary. Generally thicker walls are required to accommodate the insulation requirements, and a new consideration for overheating requires shading strategies more normally associated with Mediterranean countries. The detailing out of thermal bridges and the spatial requirements of MVHR can have an impact on height, and a careful consideration of fenestration to suit orientation is also necessary.

The Wimbish Passivhaus scheme by Hastoe Housing Association

From the technical side, more innovative design to achieve these requirements means understanding the sensitivities of product performance and a clearer understanding of the impact of site construction quality to achieve the standard. Higher levels of air tightness will require a greater understanding of ventilation requirements, particularly in domestic environments, and care over installation and commissioning of systems.

But, does it work? One of the first non-enthusiast Passivhaus schemes in the country was the innovative Wimbish Passivhaus scheme by Hastoe Housing Association. There the UEA, supported by the Technology Strategy Board, have monitored 14 units for over two years, studying not only fuel use, but internal temperatures, air quality, overheating, filter changes and a host of other criteria to make sure they deliver. It is clear that the occupants love both the comfort and economy, with annual fuel bills of less than £150 for a 3 bedroomed house, maintained at a constant 20+ degrees and with better air quality than naturally ventilated houses.

In addition to the fuel savings, the better internal environment has significant health benefits for occupants, eliminating draughts and condensation issues, ensuring clean internal air quality and providing constant internal temperatures. The houses are quieter and more solidly built with better quality components requiring less maintenance.

At the moment, Passivhaus does cost a little more to construct, but with fuel bills only going one way,

Chris Parsons FCIOB
Director

the payback period makes the decision inevitable. With over 30,000 Passivhaus already in Europe, the UK has been slow to start, but is now catching up rapidly. From none in 2008, we now have around 150 of them, and with over 450 on site at the moment, the trajectory looks promising.

As an energy and comfort standard Passivhaus is limited in what it can do to alleviate a housing crisis largely caused by land supply issues. What it can do though is ensure that the country's energy needs are kept within its capacity, and the housing stock of the future is fit for purpose. ■

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Solid floor insulation the easy way

With large numbers of poorly insulated or uninsulated buildings across the UK that will still be standing in 2030 and beyond, it is crucial that solutions are found for even the most problematic areas. Tony Millichap, Technical Manager at Kingspan Insulation Ltd provides an answer...

There is plenty of information in the market place about how to deal with hard to treat walls, and the various benefits of Internal Wall Insulation (IWI) or External Wall Insulation (EWI) are well understood. However, there is comparatively little about upgrading existing solid floors, which can be equally hard to treat and are also an important aspect of improving the energy efficiency of our existing building stock.

One of the reasons for this is the undoubted problem of accommodating the thicknesses of traditional insulation materials in floors that are needed to make a serious difference. This normally involves a great deal of digging down and removal of earth, or the raising of floor levels, with all of the subsequent work that has to be undertaken in raising doors, lintels, skirting boards and radiators.

A solution

Problem solving products such as Vacuum Insulation Panels (VIPs) can minimise these issues by achieving desired U-values with a far lower thickness than that required of traditional insulation materials. VIPs have been around for many years, and have been successfully used in building applications, where a lack of space, due to design or the constraints of refurbishment, means that they are the most efficient, and perhaps the only viable insulation solution.

VIPs are made from a micro-porous core, which is 'evacuated' and sealed in a thin, gas-tight membrane. The membrane has to be capable of withstanding atmospheric pressure and of maintaining the vacuum over time. The resulting panels can provide an insulating performance that is up to five times better than that of traditional insulation materials. The

panels are usually combined with rigid thermoset infills which can be cut to fit around penetrations and inserted vertically around the floor perimeter to prevent thermal bridging.

Getting it down

Solid floor applications provide an excellent example of how VIPs can provide a viable solution to a common retrofit problem.

One approach to accommodating an effective thickness of traditional insulation is to raise the existing floor level. However, this will reduce the floor to ceiling height within the room and requires fixtures and services such as plug sockets, door lintels and radiators to be raised in line with the floor level, creating yet more remedial work and again increasing the time and cost involved.

The alternative is to manually dig down. This often requires a large volume of material to be removed, leading to increases in project times and cost. For example, the minimum U-value target for refurbished floors under Approved Document L1B 2013 is 0.25 W/m^2.K. To achieve this in a typical Victorian terrace with a 36 m^2 (perimeter/area ratio of 0.3) floor area, where the existing floor is being replaced, 60 mm EPS (0.038 W/m.K) is needed. This requires 2.16 m^3 of ground material to be excavated by hand and removed from the site, greatly extending the construction program.

In contrast, a VIPs system including 15% infill panels can achieve the required U-value performance with a thickness of just 26 mm, meaning less than one cubic metre of soil needs to be removed. This should allow work to be completed more quickly and easily, helping to minimise disruption for the building owners and reducing construction costs.

As building regulations tighten, it's even more important to ensure all areas of the building envelope are properly insulated. VIPs provide an ultra-thin solution, helping to keep projects on track without compromising on head height. ■

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Designing out the performance gap

The Zero Carbon Hub has recently recommended priority actions for the industry to close the 'performance gap'. Here, Nick Ralph from MIMA welcomes the report and draws upon some of MIMA's own work to illustrate its importance...

In its July 2014 report 'Closing the gap between design and as-built performance' the Zero Carbon Hub highlighted a number of key issues facing the industry if we are to tackle the performance gap – but two areas in particular are close to MIMA's heart.

The report highlighted concerns regarding the appropriateness of standard test methods for manufacturer performance declarations surrounding thermal conductivity, heat recovery and efficiency etc. This is because products and materials are generally tested in isolation, not in-situ on site. Whilst testing materials in isolation provides a logical and level comparison between products, it does not allow for issues such as air movement within a wall element, or build tolerances when different products are fixed together. The Zero Carbon Hub therefore questioned the validity when results are used as an input into energy modelling tools such as SAP and then related to as-built performance.

Real performance testing is an area MIMA has been heavily involved in over recent years, particularly in relation to researching the effects of the party wall bypass. Previously, there was an assumption that cavity party walls were an area of thermal equilibrium between two heated spaces and not a source of heat loss. However, studies by the Buildings and Sustainability Group of the School of the Built Environment at Leeds Metropolitan University (LMU)

between 2005 and 2007 showed that, for example, in a mid-terrace dwelling the heat lost through untreated party cavity walls could be greater than that which is lost through all of the other external elements combined.

A series of field trials were conducted on the party wall cavities of terraced and semi-detached masonry houses. The research combined a number of methodologies to achieve robust results:

- Coheating tests were undertaken of dwellings either side of the party wall both heated to the same temperature. Internal measurements included mean internal temperature, humidity and energy consumption;
- Airtightness pressure tests were taken at the start and end of the coheating test period, including the identification of air leakage pathways;
- Heat flow into the party cavity wall was measured directly using heat flux sensors attached to the surface of the internal faces of the party wall;
- A local weather station was attached to the test dwellings, to measure external temperature, external humidity, wind speed, wind direction and solar insolation;
- Air temperatures were taken inside the party wall cavity;
- Observations and measurements of the dwellings as constructed were recorded, to include borescope investigations of cavities and junctions;
- Infra-red thermal images were taken from both inside and outside the dwelling and under a range of external conditions.

The test results were two-fold. Firstly they proved that the magnitude of the party cavity wall thermal bypass was equivalent to the party wall having an effective U-Value of the order 0.5 to 0.7 W/m^{2}K. As a result, there was an inclusion in the amended

Examples of party wall insulation

Domestic Building Regulations in 2010 (Part L1A) that party walls would need to be fully filled with suitable insulation and effectively sealed at the edges in order to achieve an effective zero-value.

The tests also demonstrated that full-fill mineral wool insulation is particularly suited to meeting the regulations, as together with effective edge sealing, it has been proven to comply with the requirements for a zero U-value without compromising acoustic performance.

MIMA welcomes the Zero Carbon Hub's recommendation for a range of approaches to diagnostic testing that can be consistently carried out at scale and available for a reasonable cost – and the call for

Nick Ralph
Mineral Wool Insulation Manufacturers Association (MIMA)

significant investment in R&D from government, developers, manufacturers, and research programmes.

"Real performance testing is an area MIMA has been heavily involved in over recent years, particularly in relation to researching the effects of the party wall bypass."

The importance of good workmanship was also highlighted. Ultimately, manufacturers' products are only as good as the installation – and skills and knowledge training is also a priority action recommended in the report, with an emphasis on how crucial it is that installation instructions are adhered to.

The recent changes to the new Part L regulations go some way to tackling this. Tougher rules looking at thermal bridging and air permeability are widely expected to lead to better quality workmanship on building sites - with leakage allowances down to five cubic meters per square metre per hour – and penalties being applied to any dwelling not physically tested. This drive towards real performance, which MIMA is very active in, is going to be a clear way of identifying shortfalls in building materials and techniques.

Product choice also has a role to play. For example, the research undertaken by LMU into the thermal performance of party walls also required the performance of the external elements of the building envelope to be measured. During this aspect of the investigation, the full-fill mineral wool insulation slabs installed in the external wall cavities were shown to provide robust in-use performance. In particular, the close fit provided by mineral wool at insulation joints and at building interfaces played an important part in ensuring there wasn't an appreciable 'performance gap'. Quite simply, good performance demands good fit, and using materials that are easy to fit without gaps proved to be an important design step.

MIMA has long championed the use of Building Regulations to drive change in building practices, to improve delivered thermal performance and measure real, in-situ performance. The Zero Carbon Hub's latest report and the recent changes to Part L are therefore seen as greatly encouraging and will hopefully bring the industry another step closer to closing the performance gap.

mima
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Meeting thermal and acoustic performance in party walls

Since the revision to Approved Document L in 2010, party walls have a thermal as well as acoustic purpose. Tom Foster, senior product manager at Saint-Gobain Isover, discusses the importance of meeting thermal bypass requirements without jeopardising the original purpose of the party wall – acoustics.

Introduction

Over the past ten years, the construction industry's focus for party walls has been on improving acoustic performance, cost of installation and ease of compliance. However, since the revision of Approved Document L in 2010, focus has switched towards meeting thermal regulatory requirements by removing thermal bypass from the party wall. Despite this added complexity, it is important for the industry to remain focused on achieving good all-round performance, including acoustics.

Meeting regulatory requirements

For anyone building to 2010 or 2013 thermal regulations, serious penalties will be incurred in the SAP calculation tool if party wall thermal bypass is not addressed. The penalty is a default U-value of 0.5 W/m²k for the party wall unless measures are taken to address the issue. This can be achieved in two ways: effectively edge sealing the cavity; and/or restricting air movement by filling the cavity with mineral wool. If both measures are taken, a zero U-value can be assigned to the wall in the SAP calculation tool.

The full-fill mineral wool insulation used to restrict thermal bypass also plays a big part in the acoustic performance of the wall. Whereas the thermal requirement for the product is generic and non-brand specific, often the acoustic requirement is much more precise and moving away from the product or brand specification could negatively impact the acoustic performance of the wall.

When applying measures to address thermal bypass, care must be taken not to create a detrimental effect on the acoustic performance of the wall. The easiest and often most financially viable way to ensure compliance with acoustic and thermal regulation is through the Robust Details scheme.

The solution

Over the past five years, Isover has gone to great lengths to support the industry with robust solutions for masonry party walls. Isover's range of three proprietary Robust Details; E-WM-17, E-WM-20 and E-WM-24 all incorporate Isover RD Party Wall Roll, a full-fill mineral wool roll designed to meet the requirement for a fully-filled cavity to eliminate thermal bypass, and to maintain high levels of acoustics. In addition, all three details remove the requirement for pre-completion sound testing and a parge-coat prior to dry lining.

By registering and building to one of these three Robust Details, house builders can claim a zero U-value party wall in their SAP calculation whilst continuing to achieve high levels of acoustic performance. Care should be taken to ensure the exact specification of the Robust Detail is followed, including insulation, wall ties, block type and plasterboard, to ensure the designed acoustic performance is achieved on-site.

Summary

The introduction of thermal requirements for party walls in 2010 may have created more complexity for the industry, but by building to the specification laid out in Isover's three proprietary Robust Details, construction professionals can have peace of mind that they will meet the new thermal regulatory requirements and maintain the consistently high acoustic performance of party walls that has been developed over the last decade.

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Energy saving insulation

The Energy Saving Trust examine solid wall insulation and what opportunities it has for UK homes along with what households should consider...

It goes without saying that more expensive measures will provide the greatest savings and warmest homes. Unsurprisingly, millions of households have installed cavity wall installation which offers a very good energy saving payback, while practically every home in the UK now has some form of loft insulation installed.

This is good news for the UK but there are still millions of homes with solid walls that could still benefit from wall insulation. Only three per cent of solid wall properties have solid wall insulation, despite solid walls letting through twice as much heat as cavity walls do. There is an opportunity here to dramatically improve the UK's housing stock through solid wall insulation either on the inside (internal wall insulation) or outside (external wall insulation) of properties.

With many homes that could still benefit, but limited government funds to support solid wall insulation, there is a need to target those homes that could benefit the most. Finding these households most in need is not always simple. Luckily more and more data is available about the UK's housing stock, such as the Energy Saving Trust's Home Analytics, which can be used to focus insulation activity on the coldest and most expensive to heat homes, along with the most vulnerable households, to make the most of any government support on offer.

The energy savings associated with solid wall insulation is high – around £270 a year in the average three-bed semi-detached home or even £460 a year in a detached home, with carbon savings between 1,000 and 2,000 kg. However, the up-front costs are high and vary significantly depending on the level of work required in the home. External wall insulation could cost anywhere between £9,000 and £26,000 while internal wall insulation is between £4,000 and £16,000. Another barrier is the hassle associated with the works, with households not wanting the disruption to the home that comes with solid wall insulation.

Luckily, there are ways to remove these barriers. If households are looking for cheaper rates, fitting the insulation work in line with other home improvements will save money on the job and spread the cost of the insulation, while also removing the hassle and disruption barriers. For example, if households are planning a new kitchen or bathroom, then it might be a great time to also explore internal wall insulation.

Households are three times as likely to consider energy efficiency upgrades alongside other home improvements, works and renovation projects, while 85 per cent of UK households would stretch their budget on home improvements to pay for energy efficiency measures and upgrades. This should be seen as an opportunity for installers who could sell energy efficiency measures alongside wider home retrofits.

Another important consideration with solid wall insulation is making sure it complies with Building Regulations. Normally the installer will ensure that the insulation is up to standard and will arrange approval from the local Building Control Office. However, if they are not going to do this, then the Building Control Office should be contacted at an early stage to make sure the proposed works comply.

"The energy savings associated with solid wall insulation is high – around £270 a year in the average three-bed semi-detached home or even £460 a year in a detached home, with carbon savings between 1,000 and 2,000 kg."

For solid wall insulation the homeowner will need to employ a professional installer, with external wall insulation required to be fitted by a specialist installer trained by an approved system designer. Homeowners can search for companies that specialise in solid wall insulation through the National Insulation Association (NIA) and Insulated Render & Cladding Association (INCA) websites. If the internal wall insulation works coincides with other building work then the home-owner might want to ask the same builder to do the insulation, but it's important to check that they have experience in fitting internal insulation. ■

For more information about solid wall insulation visit
http://www.energysavingtrust.org.uk/Insulation/Solid-wall-insulation

energy saving trust

Energy Saving Trust
www.energysavingtrust.org.uk
www.twitter.com/EnergySvgTrust

Schöck performance values independently verified by the OISD

As a leading specialist in the provision of advanced solutions for thermal energy structural insulation, Schöck demands extremely high product performance standards. The company always ensures that all solutions exceed the necessary building regulations and that any performance claims are verifiable. To guarantee the accuracy of its current performance values, Schöck has submitted three of its main connectivity solutions for independent evaluation by the Oxford Institute for Sustainable Development (OISD), at Oxford Brookes University. One of the UK's largest research institutes dedicated to sustainable development research in the built and natural environments.

To identify areas where there is a risk of condensation and therefore mould growth in different design situations, a 'surface temperature factor' (f_{Rsi}) can be used. It allows surveys under any thermal conditions and compares the temperature drop across the building fabric, with the total temperature drop between the inside and outside air. The ratio is described in BRE IP1/06; a document cited in Building Regulations Approved Documents Part L1 and L2 and Section 6 in Scotland. Using the formula, the recommended (f_{Rsi}) value for offices and retail premises is equal to or greater than 0.5; and to ensure higher standards of comfort for occupants in residential buildings, equal to or greater than 0.75.

Three connectivity types were submitted for evaluation. Namely, concrete balcony connections (type K), steel balcony connections (type KS14) and steel beam connections (type KST). All three were tested using different construction methods. The purpose of the investigation being to determine the resultant heat loss, minimum surface temperature and therefore temperature factor (f_{Rsi}) to comply with UK Building Regulations Part L.

With the type K thermal break element, two situations were modelled. The first represents was a wall construction with balcony slab formed by projecting concrete floor slab through wall with balcony door. The second is the same wall construction, but with a Schöck type K50 isolating the balcony slab from the floor slab with balcony door.

Results:	Without Isokorb	With Isokorb K50
Temperature factor (based on wall surface)	0.725	0.912

The results obtained show a temperature factor of 0.725 for the connection without Isokorb and 0.912 for the connection with Isokorb. As in the UK, the temperature factor (f_{Rsi}) must be greater than or equal to 0.75 for residential buildings, the type K50 exceeds these values and meets the requirements of Building Regulations Approved Documents L1 and L2. The result for the model with no connector was a failure in this application.

The type KS14 modelled four situations. (1) Direct connection of balcony support bracket to concrete floor slab; (2) a 10mm 'thermal pad' using welded endplate on balcony support bracket; (3) a 20mm 'thermal pad' using welded endplate on balcony support bracket and (4) a KS14 unit connecting balcony support bracket to concrete slab.

Results:		
Description	**Min surface temp °C**	**Temperature factor f_{RSi}**
No balcony connection		0.949
Model 1 Direct connection	13.62	0.681
Model 2 Pad connection 10mm	14.26	0.713
Model 3 Pad connection 20mm	14.11	0.706
Model 4 KS14 H200	18.07	0.904

(All of the images show display Fig numbers as they appear in the published OISD report).

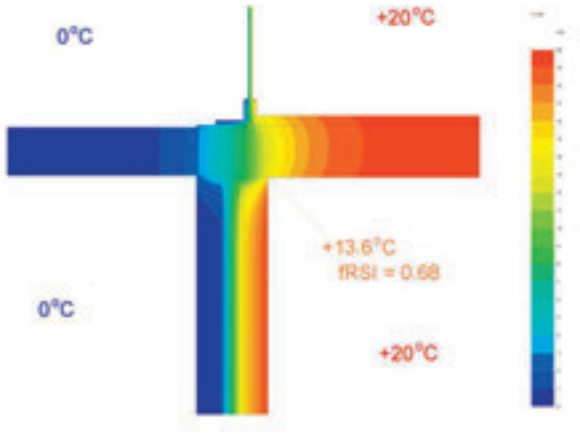

Fig 8. Direct connection (Case 1). This detail *DOES NOT* conform with UK Building Regulations Part L requirements for minimum temperature factor in dwellings (f_{RSi} = 0.75)

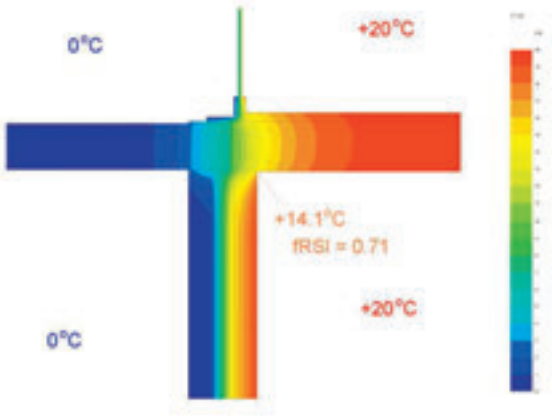

Fig 10. 20mm pad connection (Case 3). This detail *DOES NOT* conform with UK Building Regulations Part L requirements for minimum temperature factor in dwellings (f_{RSi} = 0.75)

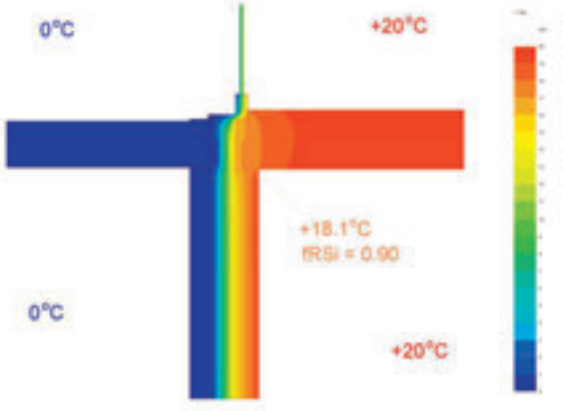

Fig 11. KS14 H200 connection (Case 4) where this detail DOES CONFORM with UK Building Regulations Part L requirements for minimum temperature factor in dwellings (f_{RSi} = 0.75)

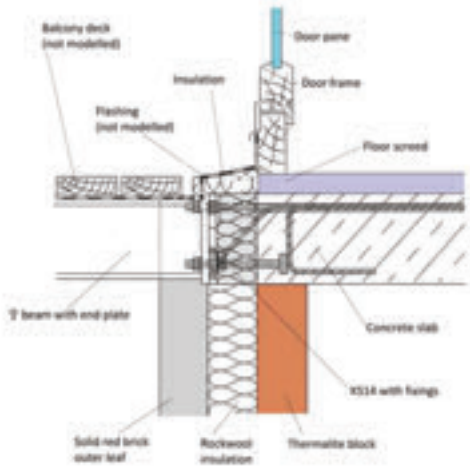

Fig 2. Schöck KS14 unit used with masonry wall and concrete slab

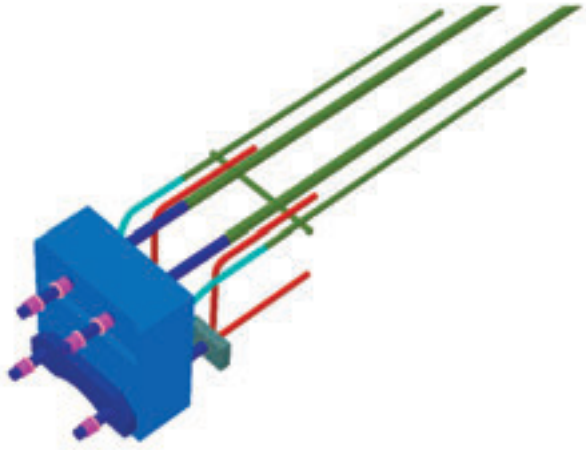

Fig 3. The KS14 unit SOLIDO model (surrounding construction omitted for clarity)

It is evident that the performance of the Isokorb KS14 is the only solution, with f_{RSi} = 0.904, to exceed these values by some margin and will therefore meet the requirements of Building Regulations Approved Documents L1 and L2. Further, the results demonstrate that where no unit is used (f_{RSi} = 0.681) and also with the 10mm and 20mm pad connections (f_{RSi} = 0.713 and 0.706 respectively) – all three would fail against the criteria required for residential buildings.

The third product to be studied was the KST module. A steel I-beam is assumed to pass through an 80mm layer of insulation, which could

represent a roof beam running through the building envelope to support an exterior canopy or overhang. Here three types of situation were studied. First an HEA200 I-beam separated by thermal isolator unit Isokorb KST16 and a HEA240 I-beam separated by thermal break unit Isokorb KST22. Second, a single HEA200 I-beam and a single HEA240 I-beam passing straight through the insulation layer. Third, an HEA240 I-beam divided by a PTFE 'thermal pad'.

Results:	
Description	**Temperature factor f_{RSi}**
Isokorb KST16	0.82
Steel I-beam HEA200 passing through insulation	0.51
Isokorb KST22	0.81
Steel I-beam HEA240 passing through insulation	0.50

The Isokorb KST16 and KST22 units, with f_{RSi} = 0.82 and 0.81, are the only solutions to exceed the required values, whereas the results for the continuous beams and beams separated by PTFE pads are marginal/failures for commercial buildings and are definitely failures for residential buildings.

The independent test results from OISD therefore all verify the product performance standards claimed by Schöck, with the various Isokorb solutions exceeding the necessary building regulations.

Technical Support Data

For the **type K Isokorb**, SOLIDO software from Physibel was used to construct three dimensional models of the applications described, in accordance with BS EN ISO 10211:1 (1996) Thermal Bridges in Building Construction – Heat flows and Surface Temperatures, General Calculation Methods BSI, 1996. Half a unit was modelled about its axis of symmetry. Steady state solution was by means of the iterative finite difference method.

For the **type KS14 Isokorb**, SOLIDO v3.1 software from Physibel was used to construct three dimensional models of the applications described, in accordance with BS EN ISO 10211:1 (1996) Thermal Bridges in Building Construction – Heat flows and Surface Temperatures, General Calculation Methods BSI, 1996. Steady state solution was by means of the iterative finite difference method.

For the **type KST Isokorb**, TRISCO software from Physibel was used to construct three dimensional models of the applications described, in accordance with BS EN ISO 10211:1 (1996) Thermal Bridges in Building Construction – Heat flows and Surface Temperatures, General Calculation Methods BSI, 1996. Steady state solution was by means of the iterative finite difference method.

Full test results are available on request:

Type K **Report Reference:** **121212SCH**

Type KS14 **Report Reference:** **120927SCH**

Type KST **Report Reference:** **060814SCH**

The report findings are based on the basic standard detail with cavity wall below the slab and glazing above.

For the above and for your free copy of the Schöck Specifiers Guide and/or the Technical Guide, contact the company on 01865 290 890 or visit www.schoeck.co.uk

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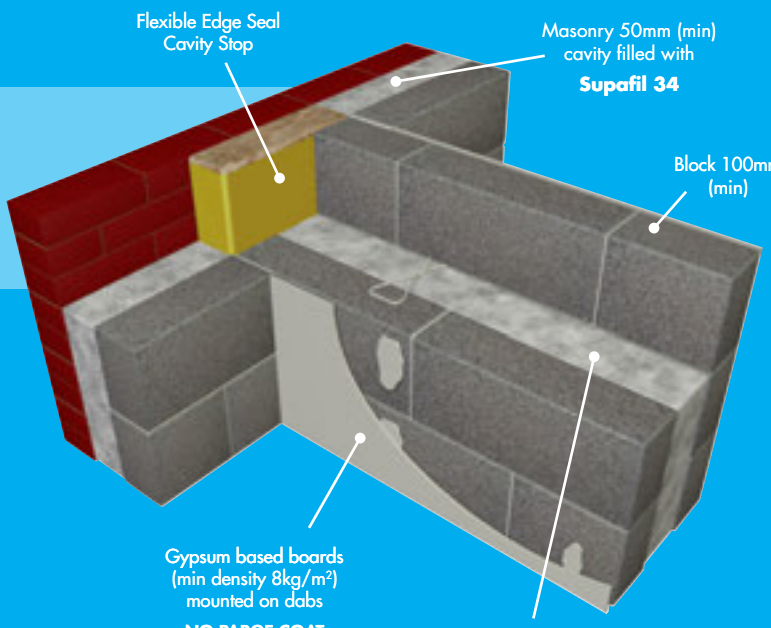

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Thermal breaks in structural connections

The thermal insulation provided by the building envelope is key to energy efficiency, but where the envelope is penetrated, thermal bridges reduce it. Here, Andrew Way, Manager of Light Gauge Construction and Product Assessment at the SCI outlines how thermal breaks can solve the issue...

Steel as a material has many advantageous properties which enable it to be used successfully in a wide range of structural applications.

However, in some situations the relatively high thermal transmittance of steel can be a disadvantage. Energy efficiency is an increasingly important parameter in the design of buildings. The thermal insulation provided by the building envelope is key to energy efficiency, but where structural steel elements penetrate the envelope, thermal bridges lead to local heat losses that reduce the efficiency. Thermal breaks can be provided in structural connections to reduce the heat losses through the steel elements.

The Steel Construction Institute (SCI) and Farrat Isolevel Ltd have been working together to establish the structural and thermal performance of thermal break materials, and the implications of including thermal break plates for the design of structural steelwork connections. Two thermal break materials were considered in this project; Farrat TBK and Farrat TBL. Thermal break plates are used between flanged connections of internal and external steelwork, or internal concrete and external steelwork to reduce thermal transmittance through the connection to reduce cold bridging.

SCI have produced a comprehensive report that describes the structural and thermal properties of the Farrat thermal break materials TBK and TBL. The properties are supported by test data and have been confirmed by independent review carried out by SCI. From the test data for TBK and TBL, SCI has derived resistance values suitable for use in structural

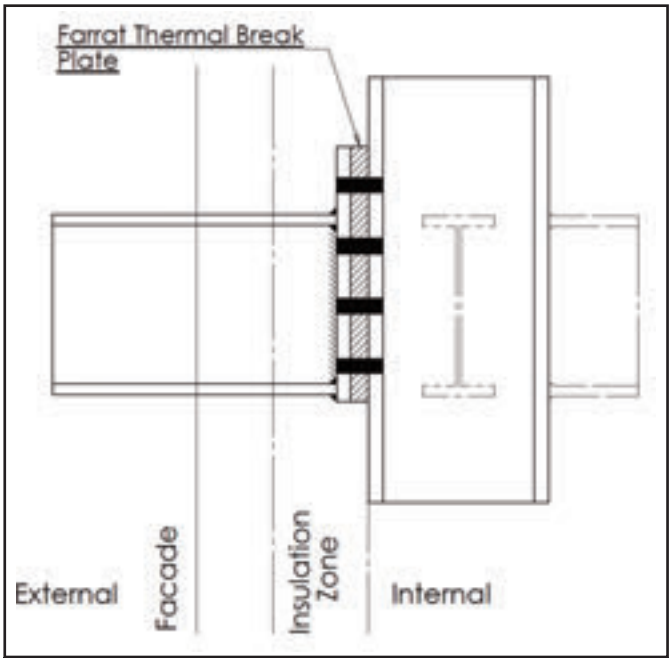

Image 1: Thermal break plate in steel beam to steel column connection

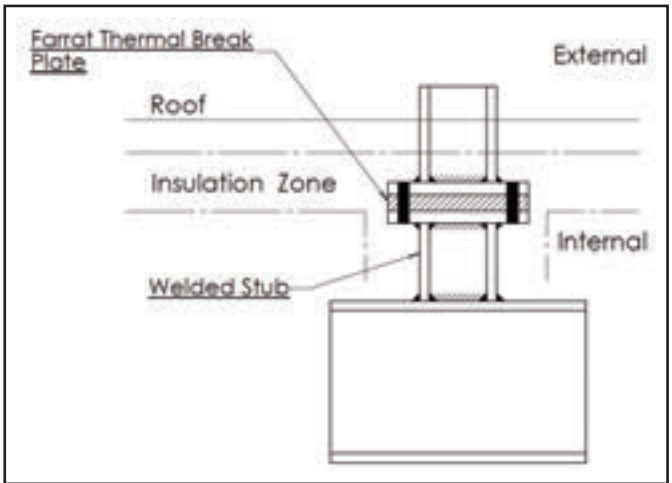

Image 2: Thermal break plate in steel post to rafter connection

Andrew Way
Manager of Light Gauge Construction and Product Assessment
SCI (Steel Construction Institute)

design. Statistical analytical methods have been used to determine characteristic values and partial factors have been applied to obtain design values.

The test programme was conducted in accordance with European standards and included:

- Compressive strength;
- Elastic modulus;
- Thermal conductivity;
- Density;
- Water absorption; and
- Long term creep.

SCI determined a set of recommended design checks which should be used when thermal break materials are used in structural connections. The design checks include:

- Compression resistance of the thermal break;
- Connection rotation due to short term compression of thermal break;
- Connection rotation due to long term creep;
- Bolt shear resistance for connections with packs; and
- Bolt shear resistance for connections with large grip lengths.

The conclusions of the work carried out by SCI, are that Farrat thermal break materials TBK and TBL can be used in structural applications provided that the appropriate structural design considerations are included, and the modifications to the connection design process as detailed in the SCI Report RT1584. As a result of SCI's independent review, Farrat thermal break materials TBK and TBL and the associated technical data presented in SCI Report RT1584 has been granted "SCI Assessed" status.

Details of the work can be viewed at:
www.sci-assessed.com and
www.farrat.com/thermal-break-connection-107.html

The work carried out by SCI and Farrat Isolevel Ltd has also been reviewed by NHBC. Farrat thermal breaks meet the NHBC's technical requirements and NHBC accepts the use of Farrat TBK and TBL for structural applications as set out in the SCI report RT1584. ■

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Simple, Flexible and Based on Part L

Energy efficiency is an increasingly important parameter in building design. Building components that penetrate the insulated envelope will produce a cold bridge, resulting in energy loss if not addressed. Whilst energy loss is important there is also a significant chance that this could lead to condensation with resulting damage to the building's fabric and mould growth. Structural thermal break plates are a simple and efficient way of meeting the requirements of Building Regulations. Appropriate analysis, detailing and specification are key to achieving good building performance.

We are perhaps all familiar now with cold bridging problems with respect to balcony systems but there are many other situations where cold bridging can be an issue. These all relate to building elements penetrating the insulated building envelope: roof plant structures, parapets, external primary structures (columns), cladding systems, brise soleil, canopies, man-safe systems, and increasingly work associated with refurbishment and basement construction.

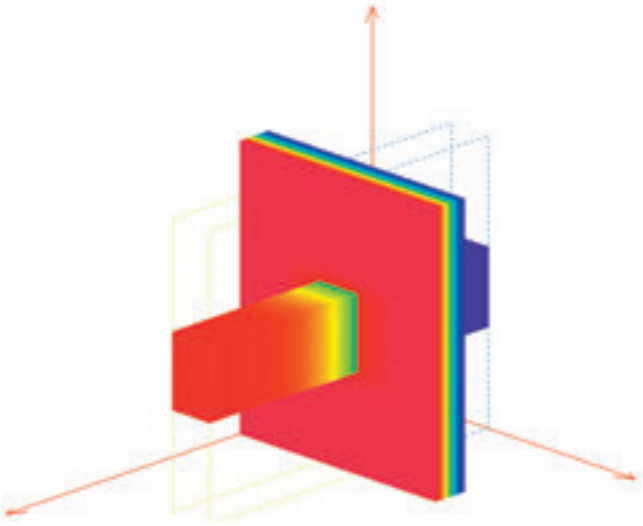
To complicate matters further there are few standard construction details where thermal breaks are incorporated because of the large variety of construction materials and systems forming the building envelope, internal structure and external features. The trick is to choose a plate solution that is both simple and effective.

Unlike proprietary mechanical thermal break systems the plate type thermal break is very simple to incorporate into most details. This flexibility means that it can be used for a variety of applications and is not restricted by the modular nature of proprietary systems. It provides the designer with freedom to develop a bespoke solution for the project.

If a structural thermal break is used, irrespective of whether it is a mechanical system or a simple plate, it will require thermal modelling to comply with Part L and to ensure the risk of condensation is eliminated. This is not just limited to the connection and thermal break but the whole fabric of the structure including the contributing external and internal structure. The detailing of the envelope and location relative to the insulation layers is also a very important detail to get right.

Design teams are very familiar with the thermal requirements of the planar elements (walls, roofs, windows etc.) but less so about the point thermal bridges. A decision to undertake the analysis for a repeating balcony detail on a large housing scheme based on cost is much easier than perhaps a project with lots of different cold bridge details where the cost of the analysis is prohibitive.

The thermal modelling process should be undertaken early in the design process but all too often it is left until the issue is raised by the supply chain during the construction phase. At this late stage it is often difficult for designers to revisit this important issue because of the potential for delaying the project or simply trying to avoid additional cost and time when the design fees have been all but expended. We are happy to assist designers in the early stages of projects or provide advice where decision making has been left late.



Thermal Model to identify the thickness of a Thermal Break Plate

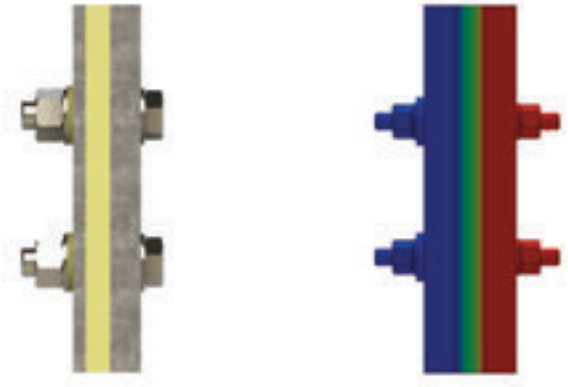
Structural connections incorporating thermal break plates need to perform well both thermally and structurally and of course there will be a compromise to satisfy both requirements. However, it is absolutely vital that the thermal break material is fit for purpose.

Whilst compressive strength is an obvious requirement for thermal break plates, the potential for creep under constant load may lead to significant serviceability issues further down the line when the contractor has long disappeared. It is therefore important that the material properties required for both thermal and structural performance are independently evaluated and accredited.

"The structural performance of connections can be seriously impaired if inappropriate thermal break materials are incorporated or if the connection design does not properly consider the inclusion of the thermal break material.

The Steel Construction Institute (SCI) and Farrat Isolevel Ltd have been working together to establish the structural and thermal performance of thermal break materials and the implications of including thermal break plates for the design of structural steelwork connections." – *Andrew Way, Manager of Light Gauge Construction and Product Assessment*

Farrat's structural thermal break plates have been designed under Part L regulations, are SCI assessed and also meet NHBC's technical requirements.



We have produced a technical handbook for our thermal breaks covering material properties, thermal design and structural methodology. To access this information or make an enquiry, send us an email to thermalbreak@farrat.com

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Minimum Energy Performance compliance

Henry Robinson, President of the CLA sheds light on the impact of the Minimum Energy Performance consultation...

The Government's recent consultation on Minimum Energy Performance (MEP) proposed the introduction of regulations that require landlords to make energy efficiency improvements to rental properties that need it. If landlords fail to ensure their private rented property meets the Energy Performance Certificate (EPC) threshold by the deadline, it will no longer be able to be rented out.

Contributing to the discussion the CLA, which represents landowners, farmers and rural businesses, submitted a consultation response highlighting a number of concerns surrounding the timing and expectations of some of these proposals.

A major concern facing many landlords, particularly those in rural areas, is the lack of available information surrounding the thermal efficiency of traditional, solid wall properties – there are seven million of these properties in the UK. The Department of Energy and Climate Change (DECC) commissioned a £2m project to understand heat losses in these properties – crucial information to have before any new regulations are proposed. However, the consultation has taken place before the results of this research is available.

Carrying out the research for DECC, Building Research Establishment (BRE) are testing the behaviour of solid walls across two winters so that U-values can be better understood. The results will not be available until 2015 as BRE carry out testing through another winter, but this research could have a fundamental impact on how EPCs are calculated. It is my belief that older properties with solid walls are rated artificially low and this research may prove this point.

Another major issue facing these proposals is timing. These regulations could be introduced in 2015, and implemented in April 2018. By 2020, it is expected that MEP attainment will be in place. This turnaround is simply too tight. Property owners who have made the required improvements may well have to commission EPCs all over again and with the methodology behind granting EPCs based on the finds of the BRE research, the system is unlikely to be ready until 2016. Our consultation response identified the likelihood of a mass re-commissioning of EPC assessments and we suggest that the deadline for MEP compliance should be moved to 2025 in order to allow landlords to plan effectively.

It is disappointing that the Landlords Energy Savings Allowance (LESA) is being scrapped. We have suggested to the Government that due to poor Green Deal take up, LESA should be retained and extended so that the tax free allowance for landlord spend on energy efficiency covers a £5000 spend per property per annum as opposed to the current £1500 per property per annum.

While the proposals show the Government is seeking to implement the Energy Performance of Buildings Directive, it is important to understand that the effects of these regulations will have very different impacts in different areas of the UK. Landlords in rural areas are more likely to own solid walled, rent capped housing, as opposed to those in urban areas who are likely to have cavity walled properties let under Assured Shortholds. If rural landlords are unable to make the changes required by 2020, they may be left with no choice but to take the property off the market. With available housing in the countryside already critically low, these regulations may result in improved energy efficiency but could simultaneously exacerbate the housing crisis. ■

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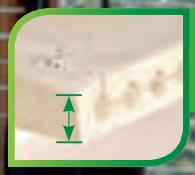

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Rising damp: rising allergies

Richard Sharpe, PhD Researcher at the University of Exeter Medical School addresses the concerning rise of allergies caused by damp...

The modern energy efficiency mantra dictates that we build new homes to increasingly stringent regulations and retrofit old housing stock to match. We insulate our houses with new materials and seal every last crack. With undeniable benefits for heating bills and CO_2 emissions, what about the impact on the indoor environment?

Internal housing conditions provide an important contribution to good health and wellbeing, and the state of our indoor environments is influenced by a number of factors. Heating, insulation, ventilation and people's behaviours, along with the type, orientation and geographic location of a property, all work to affect indoor air quality.

Over recent years we've witnessed a rise in allergic diseases that can't be explained by factors such as genetic changes alone. With one in three people suffering from allergies in industrialised countries, there has been an increasing focus on indoor air quality to explain this rise - and a robust body of evidence now suggests that rates of allergic and respiratory disease are linked to poor indoor housing conditions.

Based at the University of Exeter Medical School's European Centre for Environment & Human Health, we've just published findings that show damp and specific types of mould can pose a significant health risk to people with asthma.

We critically reviewed the findings from 17 studies in eight different countries and found that the presence of several types of mould – among them Aspergillus and the antibiotic-producing Penicillium – can lead to breathing problems in asthma sufferers, worsening their symptoms significantly. It also looks as though mould may actually help to trigger the development of asthma – but research in this area is still in its infancy.

With over 10 varieties found in a typical home, most people may not be aware that moulds are absolutely abundant in our outdoor and indoor environments. If you have a house or flat that suffers from damp, you're more likely to have more mould.

So what about the causes of damp? The structural integrity and architectural design of a (typically old) building can often lead to water making its way inside. A lack of ventilation and heating can then increase the indoor humidity, with this moisture ultimately condensing on cold surfaces and promoting the growth of mould.

Increased household energy efficiency can lead to a number of health benefits and help make a property more affordable to heat. However, efforts to prevent heat loss by reducing ventilation have led to undesired consequences for indoor air quality – increasing indoor dampness and the risk of fungal contamination, which currently affects around 16% of European dwellings.

The extent to which a home is heated and ventilated is also largely controlled by the habits of its occupants, and the way people live in their homes varies hugely. For example, some people dry their washing on indoor racks, some shower with the window closed, and many keep their windows and doors closed as much as possible in winter. All of these behaviours can increase the humidity and dampness in a home, with poorer families in particular less likely to maintain adequate ventilation through the winter months – often failing to heat the whole building.

Crucially, we know little about how these behavioural factors contribute to damp and mould in homes that have been retrofitted to make them more energy efficient – an increasingly important issue as huge swathes of old housing stock is revamped.

Our research has highlighted the need for housing providers, residents and healthcare professionals to work together to assess the impact of changes in housing quality and occupant behaviour, and we're working closely with two Cornish companies to try and find some answers.

In collaboration with social housing provider Coastline Housing, we're aiming to understand how new building practices, intended to reduce energy use and fuel poverty – such as improved insulation and energy efficiency – can affect occupant health.

Collecting data through questionnaires with residents and the detailed sampling of homes, we're

hoping to shed light on the complex mix of factors that affect indoor dampness, and communicate best practice to reduce the presence of mould. This award winning enterprise-research partnership is at the cutting edge of built environment research and has been expanded to include the innovative technology of a second Cornish company, Carnego Systems.

Carnego are helping the team by using their digital monitoring tools to collect real time data (such as temperature and humidity) on the indoor environment. As we attempt to broaden the study's applications further, we're also working with several other partners including Community Energy Plus and the Met Office – who will be providing historical weather data to determine how external weather can affect indoor air conditions.

There's no doubt that energy efficient homes have been an incredibly positive step in the evolution of the country's housing stock. But the implications for dampness, mould, house dust mites and allergic conditions have been overlooked. We're ultimately hoping that our findings will go on to inform housing policies and health intervention work aimed at reducing the costs associated with maintaining the built environment, as well as the health and wellbeing of residents throughout the UK. ■

You can read more on this research by following the links below:
www.ecehh.org/research-projects/health-and-housing/
www.onlinelibrary.wiley.com/doi/10.1111/cea.12281/abstract
www.sciencedirect.com/science/article/pii/S009167491400952X

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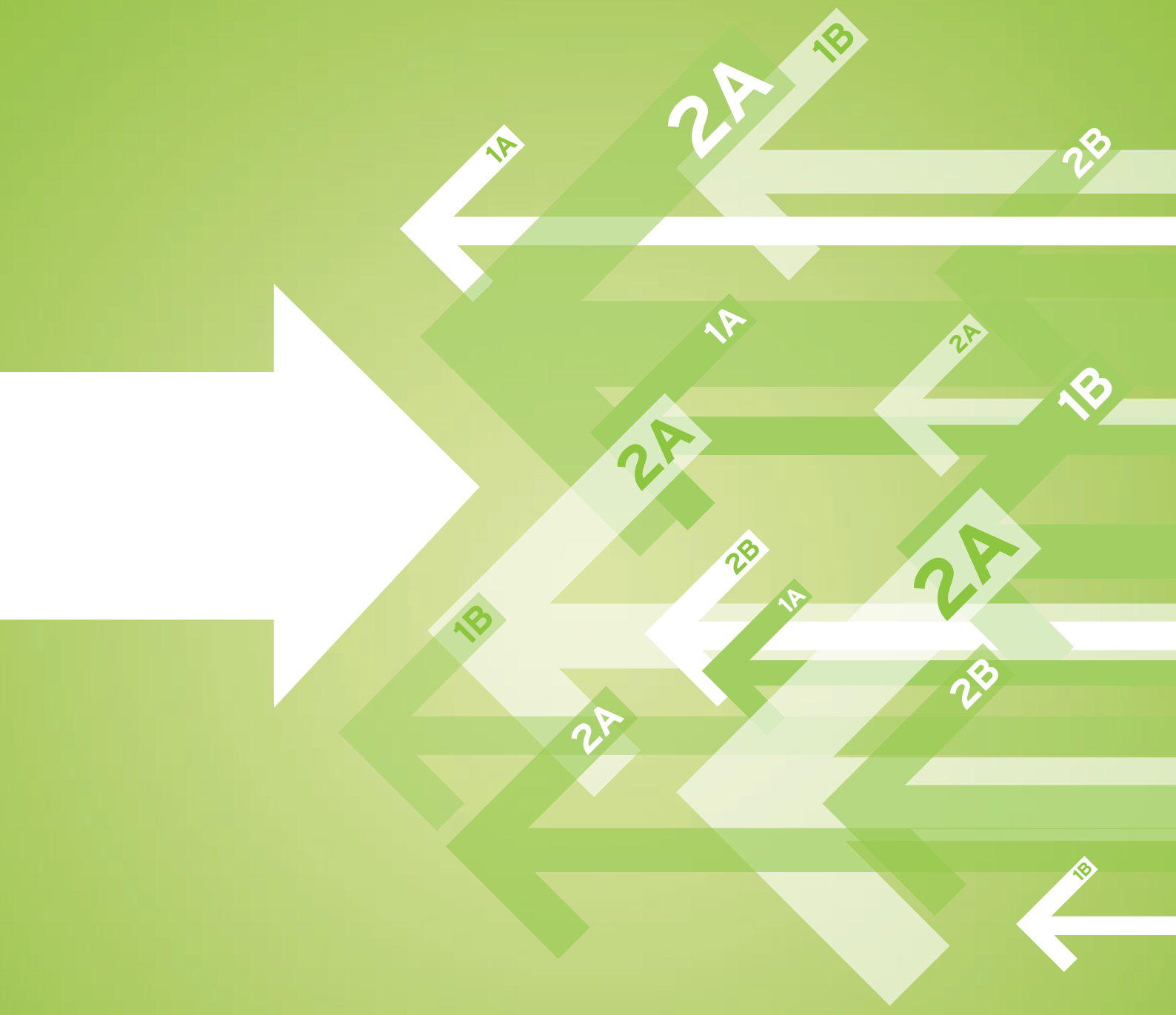
Lateral Thin**king**



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A Sustainable Future Begins With Retrofit

It is estimated that 22 million houses in the UK need to be thermally upgraded in order to achieve a worthwhile level of energy saving, with 8.5 million homes over 60 years old and considered hard to treat. But how are we tackling this and how has the past 12 months shaped up to meeting the UK's long-term targets? Mark Weaver, Project Director for Retrofit for Saint-Gobain in the UK, explains the importance of retrofitting to reduce the energy consumption of the UK's older, inefficient housing stock.

It is recognised that the UK has probably the oldest and least energy efficient housing stock in the western world. Residents in such properties feel the effects of this in the form of high energy bills, leading to unacceptable levels of fuel poverty. In order meet the UK's 2050 CO_2 commitments, the existing housing stock needs to be a high priority amongst Government policies.

Upgrading the thermal performance of the building envelope will reduce the energy required to maintain a comfortable environment. Insulation solutions and low emissive glazing are solutions at the core of Saint-Gobain's construction products sector. They can tackle all house types and elements of the building – walls, floors, roofs, windows and doors. Individually, treating these areas of the house can offer significant energy and savings on bills.

However, as demonstrated by Saint-Gobain's unique Energy House project, carried out in conjunction with leading academics from Leeds Metropolitan University, the University of Salford and Saint-Gobain Recherche, taking a whole-house fabric first approach to retrofitting a house can prove hugely beneficial for thermal improvement, air tightness and comfort for the habitants of the building.

During the three-month project, we identified that, with the installation of multiple measures, energy savings of up to

63% can be easily achieved, especially on poor performing properties, with a 50% reduction in unwanted air leakage.

Representing 21% of the UK's hard-to-treat housing stock, the Energy House is a full-scale typical 1919 end-of-terrace house. Built in an environmentally controlled chamber, tests can be accurately monitored, varied and repeated while maintaining exactly the same conditions – something that most whole-house testing cannot achieve when done outdoors.

There has, and continues to be, much publicity about energy efficiency in the domestic retrofit sector in both the industry and national press. Much of it started late last year with the political debate around so-called 'green levies'. This ultimately led to significant changes and the dilution of the original Energy Company Obligation (ECO), and, most recently, the sudden closure of the Green Deal Home Improvement Fund (GDHIF). The GDHIF initiative offered up to £7,600 for home improvements such as solid wall insulation, cavity and loft insulation and heating measures. This series of events has resulted in an increased number of energy efficiency schemes being operated, but industry is reporting that fewer installations are actually being carried out.

I'm confident that things will improve, but 2014 is unfortunately shaping up to be a year of missed opportunities for the market. Perhaps this illustrates the need for more structural fiscal incentives such as discounts from council tax rates for homeowners installing energy efficiency products in their homes. Saint-Gobain is supportive of such measures to create sustainable growth in this sector.

However, we need to look to the positive elements and celebrate the retrofit projects that are happening across the country, many of which Saint-Gobain businesses such as Weber, Isover and Celotex are supplying to. These include social housing projects still funded by the smaller and newly defined ECO, the Green Homes initiative in Scotland, where interest has been high, the 24 Green Deal Communities schemes for street-wide solid wall insulation and the one-off homeowner retrofits through the first wave of GDHIF vouchers. We are beginning to see genuine 'blending' of finance streams to deliver affordable retrofit for public and private properties – exactly how the Green Deal structure was envisaged. These are encouraging examples; we'd like to see the volumes reach a healthy level for industry investment, alongside a consistent policy framework for greater industry confidence.

In the meantime, Saint-Gobain will continue to develop retrofit solutions to meet the needs of the existing housing stock, and train and educate installers and contractors through the nationwide network of Saint-Gobain Technical Academies, leading the industry in providing a competent workforce to tackle the significant retrofit challenge.

SAINT-GOBAIN

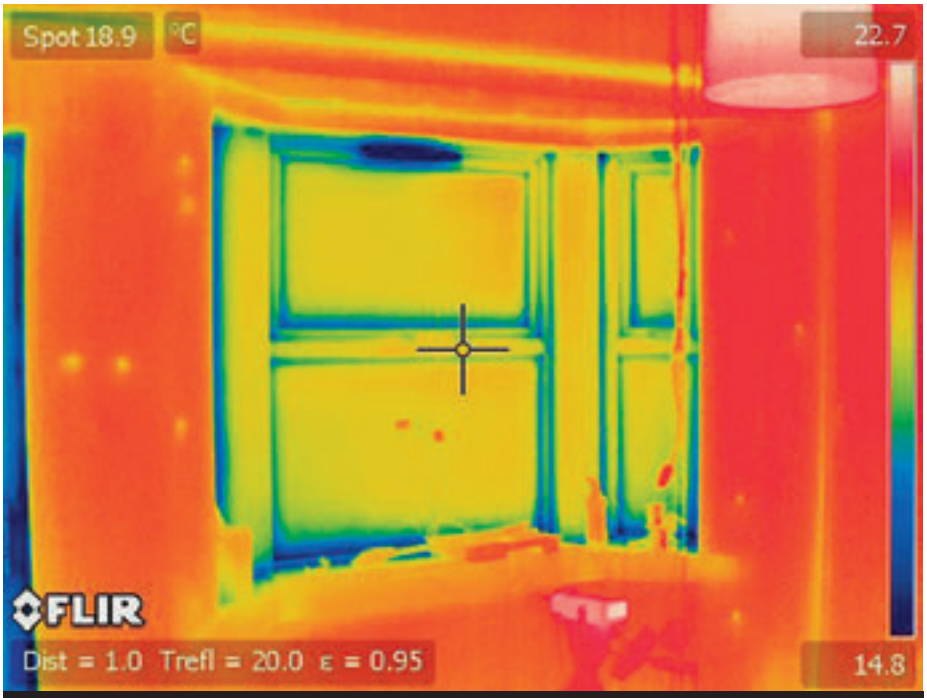
Boosting energy efficiency in existing properties

With up to 45% of heat lost through a property's solid walls[1], effective insulation can be a cost-effective way of reducing energy bills and cutting CO_2 on retrofit projects. Harjit Sandhu, Domestic Sector Manager at British Gypsum, explains.

Over the last decade, the construction industry has seen the emergence of a range of technologies all designed to improve the energy performance of a building – whether through energy conservation or generation. However, adequate insulation still remains a straightforward way of improving the energy performance of a building, reducing heating costs and creating a more comfortable environment for building occupants.

"As well as choosing the right product, correct fitting is key. So while British Gypsum IWI solutions are designed to be easy to install, we also offer extensive training courses through a partnership with Construction Industry Training Board (CITB)."

In line with this fabric first approach, British Gypsum recently worked with Derby City Council to improve the energy efficiency of 450 of its homes with Internal Wall Insulation (IWI) with great results. Since its installation, residents have reported a significant decrease in their heating bills, with some estimating savings in excess of £400 over a 12-month period. As this example shows, IWI can have a real impact on energy performance, something that the wider industry is starting to recognise too.



Warm welcome: Thermal imaging shows the heat signature of the wall surface following the installation of Gyproc Thermaline PIR

The importance of IWI

In recognition of the importance of IWI and to encourage its use in projects, regulations are becoming increasingly stringent. For example, the recently launched Part L 2014 in Wales introduced further energy efficiency requirements on work to existing buildings. This included aligning U-value (the measurement of the heat flow through a square metre of any element of a building) requirements on retrofit projects to those of new build projects. What's more, funding can now also be provided for IWI in Room in the Roof projects, as they are now covered under Carbon Emissions Reduction Obligation.

However, with an estimated eight million uninsulated solid wall properties in Great Britain, work to ensure the fabric of the building is energy efficient should also be considered before any further energy saving measures are carried out.

To help planners to improve thermal efficiency through product specification and to take this fabric first approach in buildings, and in particular, solid wall properties, British Gypsum offers four British Board of Agrément (BBA) certified Internal Wall Insulation systems: DriLyner RF, DriLyner TL, GypLyner UNIVERSAL and GypLyner IWL.

The range offers a solution for all projects, from options that can be fixed directly to internally plastered brick or block walls, to those that can be bonded to bare masonry walls. These IWI systems are also typically cheaper than external wall insulation.

Fir for purpose: Installers fit Gyproc Thermaline PIR to internally plastered brick walls

Additionally, the collection features products for more specialist requirements. The GypLyner solutions for instance, can be used where wall surfaces are poor quality or uneven, and all British Gypsum IWI systems also prevent moisture and vapour damage in kitchens and bathrooms.

The importance on installation

As well as choosing the right product, correct fitting is key. So while British Gypsum IWI solutions are designed to be easy to install, we also offer extensive training courses through a partnership with Construction Industry Training Board (CITB).

These specially developed upskilling courses, which are available through our national network of Technical Academies, meet PAS2030 and associated standards, and the content is independently verified for its quality. In fact, these measures mean qualifying companies can apply for grants for their employees and labour-only subcontractors to complete the course.

As this issue of energy efficiency is increasingly a priority for the industry, it's essential that a fabric first approach is thoroughly considered in refurb and new build projects to ensure optimum levels of thermal efficiency are achieved.

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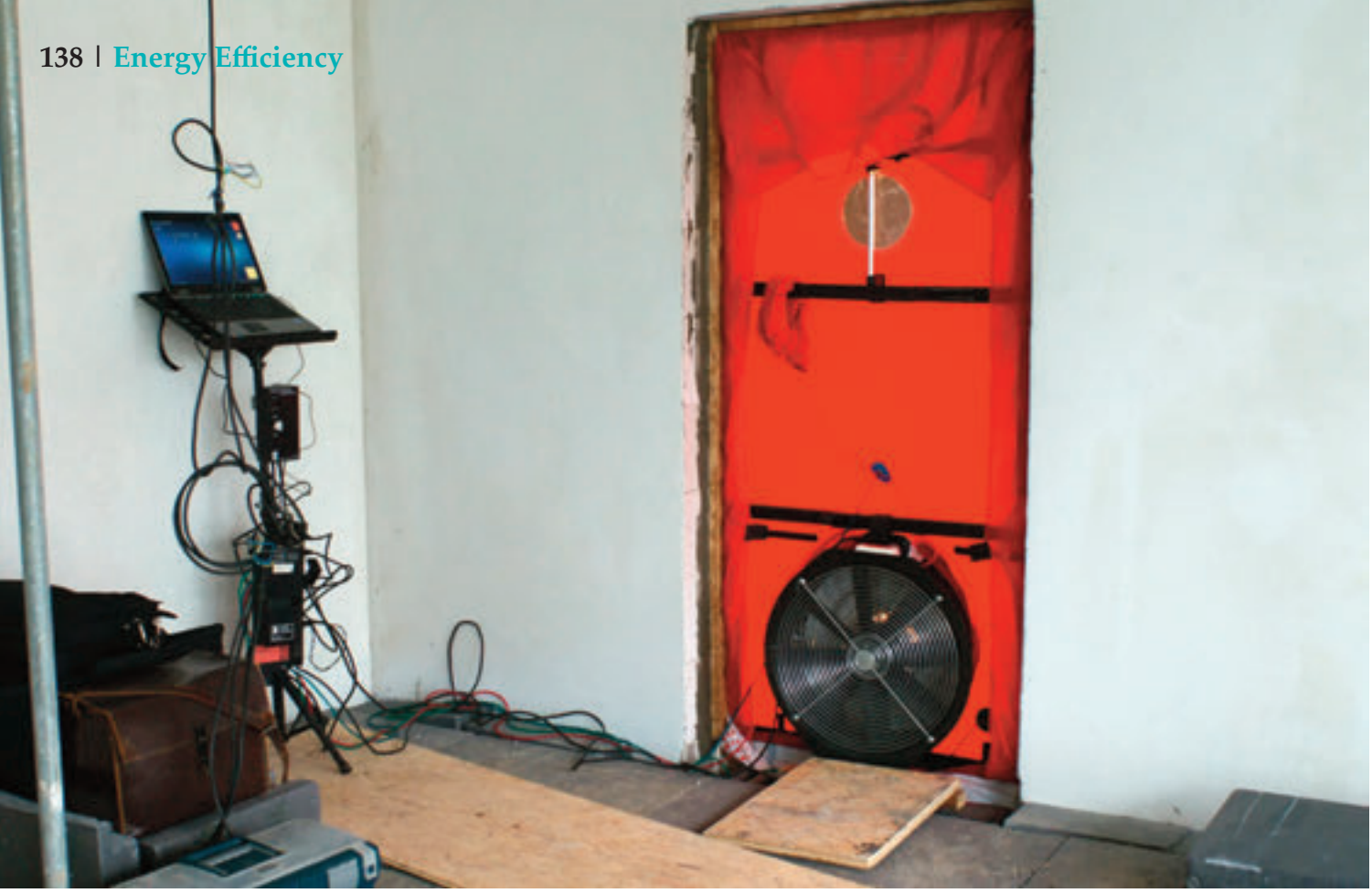

Ventilate for health

Steve Evans at NHBC explains how to ensure adequate ventilation to naturally-ventilated dwellings with high levels of as-built air permeability...

Changes to Approved Document L in 2006 have led to dwellings becoming substantially more airtight than they were in the past. Whilst increased airtightness is beneficial for improving energy efficiency, there are consequences for ventilation: with fewer minor gaps in the fabric, there will be less unintended ventilation to supplement the background ventilation provided.

Adequate ventilation is necessary to ensure that moisture and pollutants within the dwelling are managed and indoor air quality is satisfactory. This is particularly important since research[1] has established a link between indoor air quality and the health of occupants, with effects including a range of serious conditions such as allergic and asthma symptoms, lung cancer, chronic obstructive pulmonary disease, airborne respiratory infections and cardiovascular disease.

Where ventilation system 1 (background ventilators and intermittent extract fans) and system 2 (passive stack ventilation) are used, Approved Document F 2010 recommends that an increased total ventilator area is provided:

- where the design air permeability is tighter than $5m^3/(h.m^2)$ at 50 Pa
- where the as-built air permeability is tighter than $3m^3/(h.m^2)$ at 50 Pa

(see Tables 5.2a and 5.2b and clause 5.10 in Approved Document F).

As builders have become more used to delivering airtight dwellings, an increasing proportion of homes are over-achieving in terms of airtightness, which gives rise to a key question:

Designed air permeability [$m^3/(h.m^2)$]	As-built air permeability [$m^3/(h.m^2)$]	Action (for AD F) (see note 3)
Leakier than 5	Leakier than 5	No action needed
	Between 5 and 3	No, but see note 1
	Tighter than 3	Yes, see note 2
Tighter than 5 (increased total ventilator provided)	Any figure	No action needed

What action should be taken when a dwelling has been designed with an air permeability leakier than 5$m^3/(h.m^2)$ and when tested the as-built air permeability is tighter than 3$m^3/(h.m^2)$?
In these situations the dwelling will have only the lower total equivalent ventilator area where the increased total equivalent ventilator area should have been provided.

Given the established links between airtightness, indoor air quality and occupant health, it is important that the issues are not ignored. The above table provides guidance for this situation.

Notes
1. Good practice would be for the BCB to discuss with the applicant the potential risks to IAQ and health of over achieving in terms of airtightness. This should help to reduce issues of under ventilation on future dwellings.

2. There is a risk that the dwelling will not be ventilated adequately and so additional background ventilation should be provided by means of larger or additional background ventilators (or installing mechanical ventilation).

3. It is not advisable for remedial action involving creating additional gaps in the building fabric. Such measures would be unlikely to distribute ventilation throughout the dwelling sufficiently evenly.

For AD L, the as-built SAP should take account of the as-built air permeability. ■

[1] Mechanical ventilation with heat recovery in new homes – interim report, Zero Carbon Hub, January 2012

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Cheap energy efficiency – A risky approach?

Achieving energy efficiency by only considering the cheapest method could cause more costs in the future. Achmed Esser of Farrat Isolevel Ltd outlines the risks and pitfalls of such an approach...

Using energy more effectively means to consume less, reduce costs, decrease carbon emissions and reduce the impact on global warming – a laudable goal, but many people do not realise the pitfalls of approaching the idea with only the lowest possible cost in mind. We have laws which dictate what we have to include in building projects which often involve extra costs and time, but some may try to evade those rules for a 'cheaper' approach.

Wind farms were one of the great solutions to produce green energy. The former energy minister John Hayes said it was too expensive. After that, the Liberal Democrat minister Ed Davey said it would produce thousands of new jobs and attract large private investments. Now, we are about to produce three new wind farms – but are we prepared for what comes next? According to Mr Davey, we would have recovered all costs in the future and have a great source of renewable energy.

Using an FFT analyser to measure the frequency spectrum of an isolated block

However, the real concern lies on how we approach this. There is a notion of fulfilling the new energy efficiency laws through the cheapest way possible – enough to get it done but not necessarily right. According to the Health and Safety Executive the result of this may be products of a low-quality and a very short lifespan, through manufacturing faults or basic mistakes during the installation process. Simon Trump from the Mail On Sunday reported that wind turbines in Bradworthy failed because of this. There are enough videos on YouTube which document the problems of careless installations resulting in exploding wind turbines.

Industry today reports about 2 million people are suffering from mouldy homes. A survey of 2000 people showed that 38% complained of condensation. The National Energy Foundation marks this as an irresponsible approach towards the energy efficiency of buildings.

Looking only for the cheapest construction products can be a risky approach, with the reports of condensation in homes proving that we need to address the installation of energy efficiency solutions the right way.

There are six factors of approaching companies for new projects which could help us turn it around, not only to remove these threats, but reduce financial risks and maintain long-term stability.

Continued on page 142...

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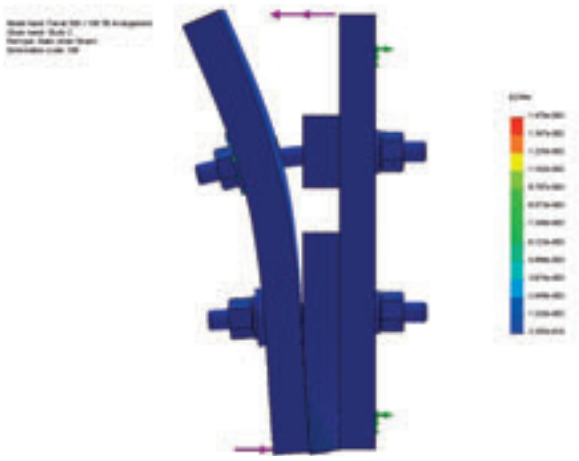


Strain Test on Thermal Break Material

Continued from page 140...

Product Data

When it comes to construction or engineering products, the client should be presented with a selection of datasheets and white papers. It is important to provide information of the products' attributes to include them in modelling and evaluate its suitability. However, in order to provide such information, a company is often required to perform tests.

Product Sample/Test

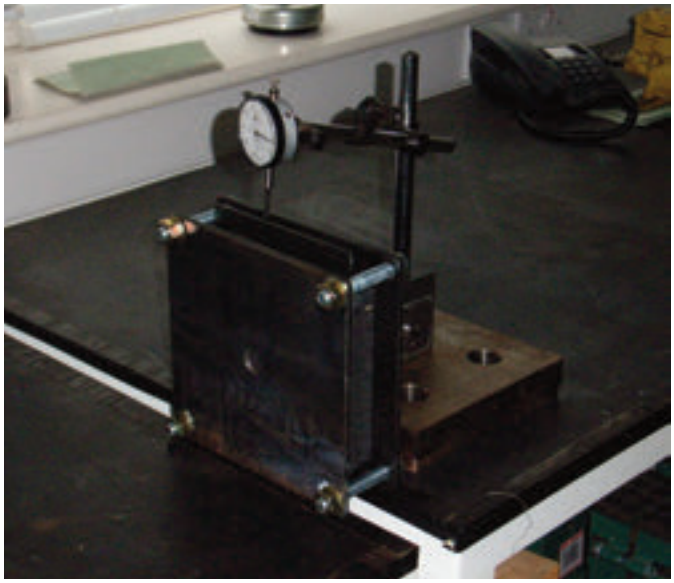
Companies who offer samples and provide follow-up have the best approach in dealing with clients and developments. This can be a sign that the business cares about their stakeholders and believes in their own products.

Mentality Check

Having a website which describes the culture and values of a company is not enough. What also counts is their age and history. A quick phone call should be sufficient, rather than reading it from a page, and asking any employee about the companies' values and mission will reveal how well it is managed, how employees are treated and how the mentality is designed. These are important clues to understand the nature of a business. In most cases a business can only be as good as its weakest part.

Quality Policy

A quality policy shows that the company has made arrangements to maintain a professional level in managing business processes. This should be assessed by a third party and it is best to ask for a proof of this before doing business. For example, this could be their BS EN ISO 9001.



Strain Gauge Experiment

Independent Party Product Test

Product data tests provided by a third independent party show that the information is valid. It indicates that the company is willing to prove that their solutions work and can be trusted which is especially important when it comes to new products in the construction market.

Warranty

The warranty of products is the proof for how much the company believes in their own solution. If the company offers no warranty at all, it could be an alarming sign. If that is the case it is best to ask for the reasoning of why a warranty is not offered.

If all these steps are fulfilled, there should be no harm in choosing less costly products for any project. ■

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PWS

Selecting a third surveyor

James Jackson, Head of Training and Education with the Faculty of Party Wall Surveyors outlines how third surveyors are selected in party wall matters and what their role involves...

Many practicing party wall surveyors are selected to act as a third surveyor and yet do not get to know that such a selection has taken place. The two appointed surveyors have merely made a selection of their choice and, quite simply, have not bothered to inform the person selected of that choice. Although this is a somewhat casual approach to dealing with party wall procedures, it generally arises out of the two appointed surveyors assuming that there will not be a need to refer any matters to the third surveyor because the two appointed surveyors are sufficiently well known to each other, and are confident that they will not cause a dispute which will need to be resolved by the third surveyor.

Alternatively, it is often assumed that the time scale for resolving party wall disputes will be so protracted that it will not be possible to predict when a third surveyor may be available, should the need arise for the engagement of his services. This approach is all well and good when appointed surveyors are well known to each other or anticipate that the resolution of the disputed matters before them may take a good deal of time to bring to a conclusion.

More often than not, appointed surveyors will apply themselves with sufficient diligence to resolve the matters that the dispute requires them to deal with and therefore, the third surveyor is not called upon to act, but nevertheless the third surveyor must be

Continued on page 146...

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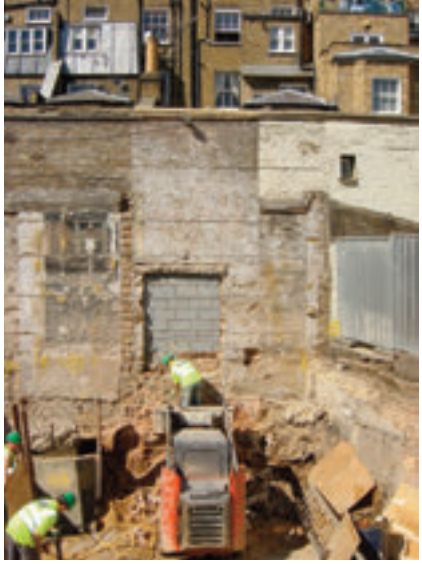

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- Providing advice on Rights of Light Issues
- Acting as an Expert Witness on Party Wall matters

If you are unsure whether your project falls within the remit of the legislation, are concerned to know whether other consents or permissions are required, or just require a quotation please contact us for a free initial consultation.

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Orpwood Associates
Chartered Building Surveyors

Regulated by RICS

James Jackson FFPWS
Head of Training and Education
The Faculty of Party Wall Surveyors

Continued from page 144...

selected by the appointed surveyors "forthwith" i.e. without delay and prior to carrying out any work whatsoever.

However, there is more to the selection process than is suggested above. Firstly, The Party Wall etc. Act 1996 is specific in its provisions, particularly when administering Section 10 of the Act; namely, section 10 (2) states that "all appointments and selections made under this section shall be in writing and shall not be rescinded by either party".

Therefore, despite the casual approach of appointed surveyors or their concerns for the potential time scale involved with the preparation of an award, the selection process for a third surveyor should be as formal as the process for engagement of appointed surveyors. Failure to select a third surveyor in accordance with the procedures laid down within section 10 (2) of the Act may lead to invalidation of all work carried out by the two appointed surveyors, particularly if they are unable to demonstrate they have made a prior selection of a third surveyor.

The selection process takes on further significance insofar as it is not only an option for the two appointed surveyors to refer matters in dispute between themselves to the third surveyor, but there is also a right for each of the appointing parties to call upon the third surveyor so selected to resolve any matters which they themselves wish to have determined by the third surveyor.

Although not stated within section 10 (11) of the Act, it is implicit that this right of both of the appointing parties to refer matters to the third surveyor must be available from the outset (i.e. from the moment at which the selection has been made by the appointed surveyors). Therefore, the two appointed surveyors have a duty of care to advise their appointing owners as to who has been selected to act as the third surveyor and to add the caveat that trivial or incidental matters should not be directed to him, insofar as the cost of a third surveyors award may be awarded against the owner who refers the matter to him.

Choose your third surveyor with care

It is good practice to ensure that third surveyors have sound knowledge of the Act including its workings and established practice. When called upon to act, a third surveyor should be of sufficient competence to know how to deal with the matters brought before him. Inexperienced or incompetent third surveyors may serve Awards which will render them liable to appeal, and may be fundamentally incorrect on the face of things.

Third surveyors do not necessarily have to make awards when matters are referred to them. They may advise or direct the appointed surveyors accordingly.

If a third surveyor, having been given a specific remit, observes that other matters already agreed upon by the appointed surveyors are incorrect, he may not interfere with these other matters because he has not been given a remit to do so.

There is no established format for laying out the presentation of third surveyors' awards. However, they may be prepared and served in a similar format to the established (traditional) way in which awards prepared by appointed surveyors are laid out.

As third surveyors awards are binding legal documents they should be signed and witnessed as with any other Award.

Continued on page 148...

Commercial Mediation

A common misconception regarding Mediation is that the mediator asks each party what they want and then issues an award in the middle of the two figures.

This is not correct as the Mediator does NOT make any decisions but encourages each party to look at the dispute from all angles.

IT IS THE DISPUTING PARTIES WHOM AGREE THE SETTLEMENT NOT THE MEDIATOR.

Paul is a member of Chartered Institute of Arbitrators (CIArb), and holds a certificate in Commercial Mediation.

As with other forms of alternative dispute resolution, Mediation is a method which is less costly in time and fees than other forms of dispute resolution. In many cases courts will ask parties to a dispute if they have attempted mediation before the matter goes to court, and if not then they are more than likely to insist that the parties attempt to settle the issue by mediation.

The mediator is to remain impartial and must encourage the parties to reach a settlement which is acceptable to both parties. An agreement is then prepared by the mediator and signed by both parties.

The process of Mediation is Without Prejudice and any notes taken by the mediator will be destroyed at the end of the process. The Mediator will not disclose anything to the second party without the first parties permission.

The process is informal with no one acting as judge or jury and any party can stop the proceedings at any time if they feel that it an agreement is not going to be reached.

Using Mediation a dispute can usually be resolved in a day, or if it is apparent that an agreement cannot be reached then the process is terminated and referred back to the courts. The success rate for Mediation as a dispute resolution is in the region of 80%.

Both parties share the cost of the appointed Mediator and we are able to advise a fee quotation based on a Day rate on request

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Continued from page 146...

When called upon to act as a third surveyor it is good practice to observe the following procedures:

- Establish or check the status of the building owner or owners;
- Establish or check the status of the adjoining owner or owners;
- Identify if there are any leaseholders involved in the proceedings;
- Identify if there are any occupiers likely to be affected by the proceedings;
- Check the validity of the notices served;
- Check the validity of the appointed surveyors and their letters of appointment;
- Inform both parties and their surveyors that you have been called upon to resolve a dispute via the preparation and service of a third surveyors award;
- Inform both parties and their surveyors of the implications and the consequences of the service of a third surveyors award upon them;
- Prepare a list of documents submitted for consideration;
- Ensure that both of the parties and/or their surveyors have seen all of the documents;
- Deal with ONLY the matter(s) put before you as being in dispute;
- Set out the matter(s) in dispute as follows:-
  - Evidence
  - Reasons
  - Summation
  - Award of costs/damages/compensation (where applicable)
  - Conclusion.

All appointed surveyors and third surveyors have a duty of care to prepare their awards carefully and in a proper professional manner. It is good practice for all surveyors to consider scrupulously the preparation of their work and treat it as if it will appear before a judge with its accuracy and validity being called into question.

Finally, it is appropriate for all surveyors to remember that party wall awards (including third surveyors awards) are binding legal documents and that there is a right for either of the parties to challenge an award by appealing it to the county court, and doing so within fourteen days of the service of the award. The very nature of third surveyors' awards, dealing more often than not with potentially controversial elements of party wall disputes will inevitably identify them as being more liable to be appealed, and this endorses my earlier comment to choose your third surveyor with care. ■

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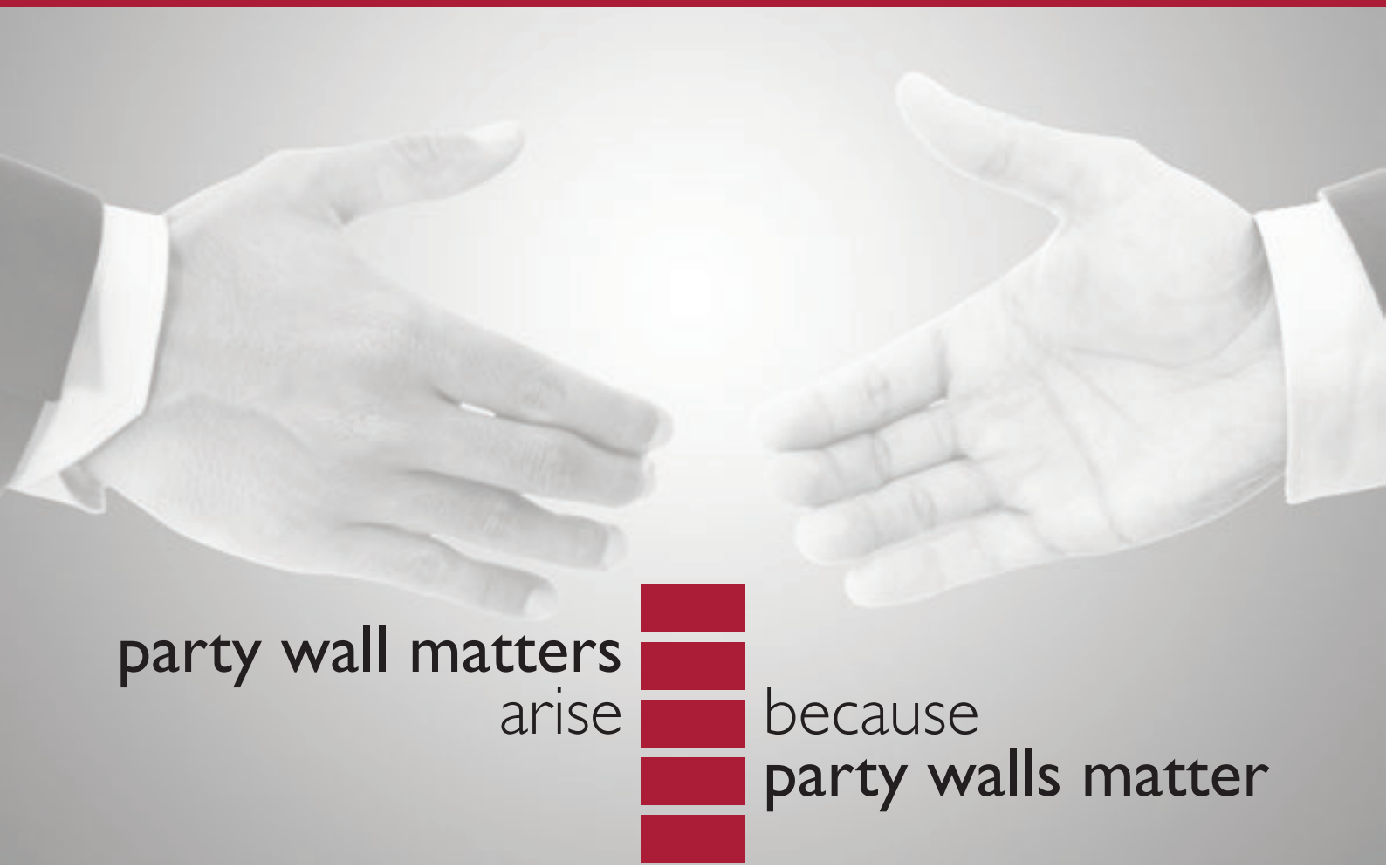

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The Party Wall etc Act 1996 applies for the following works:

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- excavating near a neighbouring building

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The Party Wall Notice: Timing is key

In the seemingly complicated world of the Party Wall etc Act 1996, Sara Burr, Chair of The Pyramus and Thisbe Club asks if notices have to be re-served if they expire...

Under S3(2)(b) and S6(8)(a) & (b) the Clauses of the Party Wall etc Act 1996, both state 'Notice' shall cease to have effect if the work to which it relates has not begun within the period of twelve months beginning with the day on which Notice is served, and is not prosecuted with due diligence.

That brings about a number of issues:

- What if you have an Award for part of the notifiable works?
- What if an adjoining owner consents to a Notice but the Building Owner hasn't started?
- What if an adjoining owner consents, and then the adjoining owner changes, and the Notices expire?

For example, you have a Notice that covers a variety of work e.g. loft extension, side return, internal alterations and a basement. Information may be available in part, and so you agree to do a number of Awards as the temporary works details for the basement are not available, and due to the issue of consent for special foundations and security for expenses arising if you fail to get an Award in place within a year, large projects could easily take longer to get in place due to the design and tender process. In the Award we state 'That the Surveyors reserve the right to make and issue any further Award or Awards that may be necessary', as provided in the said 'Act' and 'That this Award shall be null and void if the permitted works do not commence within 12 months from the date of this Award'.

It is clear we have two different Clauses, both of which have the potential for conflict. The first has no time limitations, but it also brings into question how long a letter of appointment is valid for. We state we are authorised to sign, serve and receive additional Notices, but does that have a time limitation too? What if those also expire after a year and the adjoining owner or building owner decides to appoint someone else? That could be used to frustrate the process and is clearly not the intention of the Act.

What happens if the adjoining owner consents but the building owner hasn't started? In that situation, the building owner has taken the risk of not starting in time.

If an adjoining owner consents and then the adjoining owner changes and the Notices expire, the process starts 'de Nouvo' – again a risk the building owner takes.

So, would you re-serve Notices if you had an Award for part of the works? Do you run the risk of the adjoining owner appointing a different surveyor or would that actually be a good thing? ■

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BAFE – Helping you to meet your fire protection obligations

Current fire protection legislation across the UK requires property managers of all non-residential premises to have adequate fire protection. It is their responsibility to ensure that there is an adequate, updated fire risk assessment and that all aspects of the requirements are carried out competently. To demonstrate that the responsible person (duty holder in Scotland) has met their obligations, many public authorities and commercial organisations now insist that their fire protection services are carried out by a company that has been third party certificated.

Many now specify that providers are BAFE registered. You can find out if your potential provider is third party certificated, by looking on the BAFE website: www.bafe.org.uk .

BAFE is the independent third party certification, registration body for the fire protection industry. We develop schemes for UKAS accredited certification bodies to assess and approve companies to recognised standards. There are now more than 1100 BAFE registered companies across the UK. Our aim is to support property managers to ensure that they get quality fire protection for their premises, staff and service users.

BAFE has recently launched a UKAS accredited scheme for Companies who carry out Fire Risk Assessments (SP205) which is a vital part of meeting your obligations under fire legislation. The scheme considers the competence of the individual assessors as well as the quality requirements for the organisation. There are a growing number of companies registering to the scheme, throughout the UK.

If you are looking for the supply and maintenance of portable extinguishers, look for

one of the 330 Companies accredited to BAFE Schemes SP101/ST104. Companies are certificated to ISO9001 and all of their technicians are assessed by BAFE for initial and ongoing competence. There are currently more than 1200 BAFE registered technicians, working for our registered companies.

For installing or maintaining fire alarm systems Companies should hold BAFE modular SP203-1 scheme approval. This scheme includes design, installation, commissioning and maintenance of fire detection systems and also requires that all equipment used is third party certificated. The scheme now has over 750 registered companies. Registration to this BAFE scheme is often a key requirement criteria in tenders for the provision of fire alarms.

Our Emergency Lighting scheme (SP203-4) sets out the standards and staff competence criteria to be met. It is modular as with the fire alarm scheme and is achieving growing recognition from end users.

There are a range of other BAFE schemes covering particular sectors of the fire protection industry and details can be found on the BAFE website, along with a complete search facility to find registered companies in your area.

So if you want to be sure you are getting your fire protection from companies who are properly and regularly assessed look for more information using the details below.

Stephen Adams
Chief Executive
BAFE
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www.bafe.org.uk

The business of fire safety partnerships

Graham Ellicott, CEO of the Fire Industry Association (FIA) sheds light on how businesses can now access Primary Authority Schemes for fire...

In 2009 RAFKAP Schemes were launched by the British Retail Consortium and the Chief Fire Officers Association (CFOA). RAFKAP stands for Retail and Fire Key Authority Partnerships and these schemes were designed to deliver consistency in fire inspection and enforcement, enabling fire and rescue services to target resources on high-risk businesses. These schemes were an early forerunner of Primary Authority Schemes.

Lead Fire Authority Schemes have also existed for some time, for example in 2012 Derbyshire Fire and Rescue (DFRS) entered into such a scheme with South Yorkshire Housing Association (SYA). In this scheme DFRS provided a Liaison Officer from within the Fire Protection Department who acted as a single point of contact for both parties. Plus, DFRS offered advice to SYHA in relation to all new build projects and were available for consultation for projects that fell outside of the Derbyshire area.

Looking further back in 2005 the then Labour Government commissioned a report from Sir Phillip Hampton entitled 'Reducing Administrative Burdens: Effective Inspection and Enforcement'. This report then became known as 'The Hampton Report' and it looked at the impact that regulators were having on the ability of business to compete and contribute to the recovery of the economy. The report concluded that across the regulatory gamut there were a number of factors that impacted on a business, such as inconsistent advice, excessive enforcement and inspection. The Hampton Report published a number of recommendations and all of these were accepted by the Government.

Following on from the Hampton Report, the Government, via The Regulatory Enforcement and Sanctions Act introduced the Primary Authority Scheme (PAS). PAS was developed as a partnership scheme based in law with statutory guidelines.

Continued on page 156...

BAFE - Helping business to meet their fire protection obligations

Don't gamble with your fire risk assessment!

It is a legal requirement across the UK that all premises have a full and competent Fire Risk Assessment and then implement the fire protection requirements. The 'responsible person' has the duty to ensure that they have carried out these obligations – but how can they be sure that they have used competent contractors?

BAFE has developed a scheme for Companies who carry out Fire Risk Assessments (SP205) which is a vital part of meeting legal responsibility obligations under fire legislation. Providers are rapidly recognising the value of this scheme and gaining certification. After a number of fatal fires, such as the one at Rosepark Care home in Scotland and Lakenal House in London, there have been updated requirements for fire risk assessments.

BAFE is the independent, third party certification, registration body for the fire protection industry, founded nearly 30 years ago with a wide range of industry bodies represented on our Council.

We develop schemes for UKAS accredited certification bodies to assess and approve companies to recognised standards. There are now more than 1150 BAFE registered companies across the UK. Our aim is to support property owners and specifiers to ensure that they get quality fire protection for their premises, staff and service users.

If you are specifying the supply and maintenance of portable extinguishers, look for Companies accredited to BAFE Schemes SP101/ST104. Companies are certificated to ISO9001 and all technicians are assessed by BAFE.

For installing or maintaining fire alarm systems Companies should hold BAFE modular SP203-1 scheme approval. Our Emergency Lighting scheme (SP203-4) sets out the standards and staff competence criteria to be met.

There are a range of other schemes for different fire protection requirements.

So if you want to be sure you are getting your fire protection from companies who are properly assessed look for more information at:

BAFE®

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T: 0844 335 0897 • E: info@bafe.org.uk • **www.bafe.org.uk**

Continued from page 154...

These were designed to create business investment in growth by developing confidence that regulators in different local authority areas would not place competing demands on a business which in turn could impose extra financial burdens on it. PAS includes a variety of 'strands' including:

- Assured Advice which would be provided by the regulator to a business and this would be accepted by enforcers of the same regulations;
- Inspection Plans would be agreed between the regulator and business so as to co-ordinate inspection activity under an agreed local inspection programme that was risk based;
- Enforcement Referral whereby the partner regulator has the ability to stop proposed Enforcement Action that is not consistent with the Assured Advice.

PAS was to be available to any business that operated across more than one local authority area, and it was to be applied to the majority of local authority regulatory services including the Fire Safety Order.

However CFOA opposed PAS for the Fire Safety Order and argued that its implementation would be contrary to the implementation of local Integrated Risk Management Plans. Thus, the Fire Safety Order was not included at this time in PAS.

In 2012, via the Enterprise and Regulatory Reform Bill, the Government proposed a number of changes to PAS which included it being available to trade associations and franchises. In order to see if the 'new' PAS was suitable for fire safety law, two six-month pilot schemes were run from January 2013. These were:

- A Statutory Scheme managed by the Better Regulation Delivery Office (BRDO) of The Department for Business, Innovation and Skills (BIS);
- A non-Statutory Fire Authority Partnership Scheme managed by CFOA.

These pilots were independently evaluated and it was decided that the Statutory Scheme was the most appropriate option.

In April 2014, PAS was finally extended to the Fire Safety Order and to date there are 91 partnerships listed with Hampshire Fire and Rescue Service and London Fire Brigade, being responsible for approximately two thirds of them.

The FIA welcomes the extension of PAS to the Fire Safety Order as the provision of consistent assured advice is a step forward for all concerned. However, the trade does have one area of concern and that is where the Fire and Rescue Service involved in a Partnership has an arms-length company that provides fire related services to the other party. This could lead to the accusation of conflict of interest when enforcement issues are concerned, plus, there will always be the suspicion that the work was obtained because the business partner feels that it will make life easier in general for itself if it uses the arms-length company. ■

Fire Industry Association

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Dave Carr Callsafe Services Limited

The manual is designed in a loose leaf format so that it can easily be updated, and amendments and new sections are normally published twice a year and are available to manual owners who pay a subscription. By signing up to the automatic subscription service you will receive each update twice yearly automatically.

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CDM2015: The art of selective interpretation

Although reservations remain about the HSE's proposals for CDM2015, it looks like the role of Principal Designer is here to stay. James Ritchie of The Association for Project Safety outlines what steps industry should now take...

At the Health and Safety Executive Board meeting on 13th August, the HSE Construction Division presented their Report on the Outcome of the Consultation Document – their take on the industry's response to the consultation document. Some people might say that former cabinet secretary Robert Armstrong would have been proud of the way the report was written, but their analysis was not unexpected given how carefully worded were the consultation questions.

CDM co-ordinators can however feel justifiably hurt by the somewhat disingenuous comment that all of their responses should be viewed as a 'Campaign' and that therefore the HSE Board should view the percentage of positive or negative responses accordingly. Had the Association for Project Safety actually run a campaign advising their members to respond in a particular manner, the HSE's comments would have been understandable. Of course, if all of the CDM co-ordinators' responses had been in favour of the HSE's proposals, one wonders if such a 'Campaign' suggestion would have been made.

Having seen most of the construction and health and safety institutes' responses it would appear that APS were not alone in their reservations about the HSE's proposals for CDM2015. Both IIRSM and IOSH were dismissive of many aspects of the proposed regulations, and consultation respondents found potential legal problems with the draft statutory instrument, all which will have to be sorted out quickly if they wish to bring the regulations into force in April 2015.

Whilst the HSE have bowed to industry demands for an Approved Code of Practice to run alongside the industry prepared guidance, the one thing the HSE still have not addressed properly is the cost of these changes to construction in terms of re-training and the issues surrounding a potential drop in construction health and safety standards whilst the industry gets used to the new regime.

The removal of the CDM co-ordinator role was always going to happen, even if the industry had voted substantially against it. It has been the failure of the HSE since 2007 to enforce the early appointment of CDM co-ordinators and subsequently, the failure of industry to ensure the integration of the CDM-C into the project team that has led to the HSE's proposals for CDM2015. Removal of the CDM-C role should be no problem to construction health and safety provided that those people appointed as Principal Designers have the skills, knowledge and experience to coordinate pre-construction health and safety adequately, and understand exactly what they are supposed to do. To this end, the design institutes need to come together and agree exactly what skill set Principal Designers need to discharge their duties effectively and then work hard to ensure their memberships are suitably skilled.

For all but the simplest of projects, those taking on the role of Principal Designer or Principal Contractor will want to make sure they have access to good construction health and safety advice, and the industry needs to determine what they are looking for in terms of construction health and safety risk

management consultants i.e. someone who is professionally qualified to Chartered level in a relevant construction related institution, has validated CPD in this field, and a typical additional qualification – for example the NEBOSH Construction Certificate, member of the health and safety register administered by the ICE, membership of the Association for Project Safety, membership of the Institution of Construction Safety and of course, most important of all, evidence of significant work on similar projects with comparable hazards, complexity and procurement route.

"Removal of the CDM-C role should be no problem to construction health and safety provided that those people appointed as Principal Designers have the skills, knowledge and experience to coordinate pre-construction health and safety adequately, and understand exactly what they are supposed to do."

This is an approach that many of the construction industry's leading commercial clients are now advocating through the use of experienced, knowledgeable CDMCs as construction health and safety consultants having discovered the tangible benefits they bring to their projects for remarkably modest costs – and it is not only the clients that have been benefitting from this service but also the designers and contractors. So, if clients are wanting to employ advisers with demonstrable skills, knowledge and experience in design, construction and health and safety, and many designers are apprehensive of taking on health and safety responsibilities being suggested in the HSE's proposed Principal Designer role, then the answer is surely for project teams to equip themselves with a competent and capable CDM consultant, with a capability proportionate to the complexity of the project involved. The top end professional clients in our industry know exactly why they employ capable people to advise them on health and safety – it is good for business – and that looks set to continue irrespective of the Principal Designer.

The HSE's CDM2015 proposals provide an opportunity for the construction industry to reduce bureaucracy, streamline the pre-qualification process through greater use of SSIP and PAS9, and try to introduce construction health and safety in a proportionate manner to those smaller projects where the majority of accidents are occurring. For the very smallest projects, probably in the domestic market, health and safety coordination should be simple enough for the lead designer to manage without the need for a CDM consultant, but it will need a concentrated effort by both the HSE, based around un-announced inspections of smaller sites, and greater education of both designers and contractors by their professional bodies if the change is to be successful. The 'elephant in the room' will be whether or not the HSE have the resources, ability and stomach to enforce their proposed new CDM Regulations during the pre-construction phase, or will they again just ignore it and concentrate on the soft target option of prosecuting contractors for failings on site.

We can only hope that, whatever the outcome, the construction industry, especially the SME sector, takes a sensible, pragmatic and proportionate approach to health and safety and that clients, designers and contractors all realise their limitations and understand when they need to employ a specialist CDM consultant to advise and assist them. We also need to hope that the industry written guidance to the new CDM Regulations is clear and effective, especially as the Approved Code of Practice will not appear until well after the CDM2015 regulations come into force. ■

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Health and safety training provision

Over 25 years providing effective and efficient health and safety advice and training to the construction industry and others...

Callsafe Services Limited has been providing health and safety advice, assistance and training to our clients, and our clients' projects, since 1987. Our clients have included many central and local government organisations, and private industry clients, designers and contractors.

Consultancy

Our consultants consistently ensure effective communications on projects and within health and safety management systems, with the minimum amount of paperwork produced, continuously questioning why a document is required and whether it is any use in effective management.

We have provided client organisations, architects, design consultancies and contractors with policies and procedures for compliance with British health and safety law, particularly the Construction (Design and Management) Regulations (CDM); including non-British organisations.

The policies and procedures developed by Callsafe Services Limited are effective in terms of protecting the health and safety of people, protecting the organisation from prosecution and loss of reputation, and the costs of implementation and maintenance.

Callsafe Services Limited have also developed the health and safety management procedures, health and safety rules and training toolbox talks for the Estates Departments of NHS Trusts.

Due to the breadth and depth of experience and knowledge of our consultants, we are the primary source of advice on health and safety law and its practical application for many organisations; particularly since the removal of the HSE Infoline service.

Training

The training provided by Callsafe Services Limited includes a focus on effective communication and management, rather than just the production of documentation, enabling us to provide a tailor-made service.

Training provided is made as appropriate

and relevant to our trainees, incorporating client procedures and processes where possible.

We primarily supply training in-house, where the trainer travels to our client locations. In-house courses also allow the training to be tailored to the particular work types performed by the delegates and may include our client's specific procedures and examples.

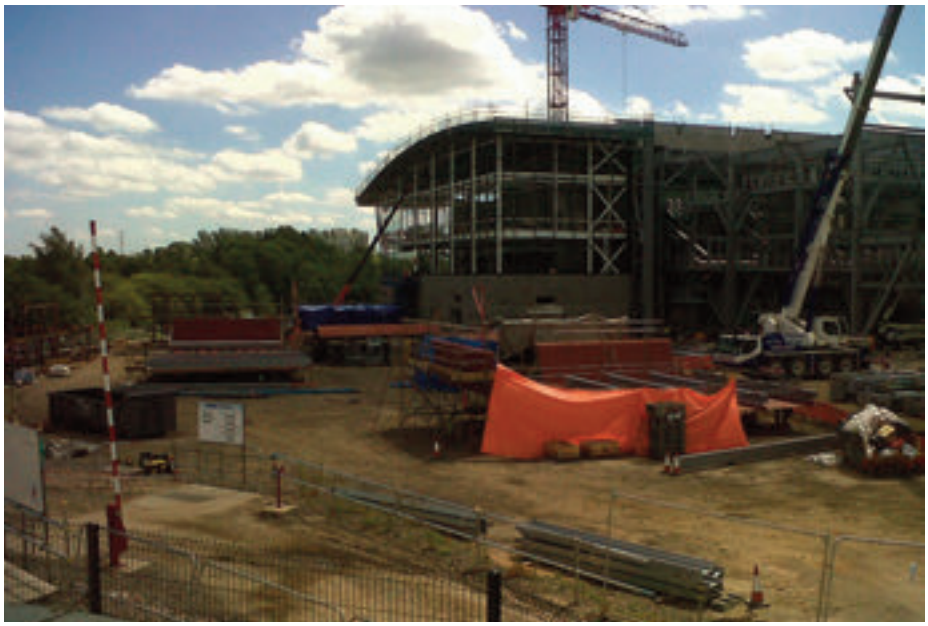
Accredited training is also available as in-house courses and occasionally and public courses. Callsafe Services Limited provides courses accredited by:

- Institute of Occupational Safety and Health (IOSH)
- Chartered Institute of Environmental Health (CIEH)
- Association for Project Safety (APS)
- Safety Pass Alliance (SPA)

The current accredited courses are:

- IOSH Managing Safely in Construction
- IOSH Management of the Construction Design Process in the Republic of Ireland
- CIEH Level 3 Award in Health and Safety in the Workplace
- APS Design Risk Management
- SPA Passport – Core

Callsafe Services Limited is also the sole supplier of health and safety training to Thomas Telford Limited, the training arm of the Institution of Civil Engineers (ICE), who supply public and in-house training courses.



Our trainers are experienced construction health and safety professionals, with construction engineering backgrounds, so enabling them to provide examples of how the legislation can be implemented for particular scenarios.

The course programmes available can be viewed at: http://www.callsafe-services.co.uk/training/. These programmes can be adapted to the particular needs of an organisation.

CDM Co-ordinator (CDMC)

Callsafe Services Limited are a Registered CDM Co-ordinator Practice with the Association for Project Safety (APS), so can demonstrate our commitment to continuous improvement of our, our clients' and our projects' processes.

Our consultants/trainers are all practicing health and safety professionals working within the construction industry, and have extensive experience as health and safety advisors/officer/managers for client, designer and contractor organisations.

Our clients include the Environment Agency and Veolia Environmental Services (UK) plc.

If you need an organisation that understands the requirements of CDM, projects, other health and safety requirements, and how these requirements can be achieved in a cost-effective way, to act as your CDMC, provide health and safety advice and assistance and/or provide effective training; please contact Callsafe Services Limited to discuss your requirements.

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Planning for asbestos removal

The importance of planning for asbestos in construction work cannot be underestimated. Tracey Boyle – Chartered Occupational Hygienist and current Honorary Secretary of BOHS outlines many of the pitfalls in failing to plan for asbestos removal...

Often, when acting as an expert witness in civil litigation in relation to asbestos management, asbestos surveying and personal injury claims for asbestos-related diseases, I receive telephone calls along these lines:

"Hello, I'm a solicitor acting for Principal Contractor. PC disturbed asbestos on site while working. It cost £000s to remove and the project was delayed by months. The Client is blaming PC and refusing to pay extra costs and imposing time penalties. We need an asbestos expert to investigate and report on the incident."

When investigating these incidents, while the details vary, the incidents often follow a familiar pattern as detailed here.

Health and safety before, during and after construction work is currently legislated for by the Construction (Design and Management) Regulations 2007 (CDM). Everyone in construction has heard of CDM and almost all construction projects must comply with the obligations under CDM. There are duties placed on the Client, the CDM Co-ordinator, the Designer and the Principal Contractor. In my experience, the construction industry and its clients are less clear about the duties placed upon them in relation to the management of asbestos, even though asbestos is still to be found in about half a million commercial premises in the UK.

Under CDM, the client or client's agent puts together a tender package of health and safety information. Asbestos usually appears on a checklist of potential health and safety issues to be considered. Sometimes an asbestos survey is appended. This is often a management survey that has been undertaken to allow the client to comply with its obligations under the Control of Asbestos Regulations 2012.

"Contractors tendering for a contract with insufficient information about asbestos will almost always under-estimate, if considered at all, the costs associated with asbestos removal because he doesn't want to add unknown costs to his tender as he will out-price the competition and lose the contract."

Often, the management survey is accepted as sufficient for the construction project, the tenders are submitted and the contract is awarded. Work commences and after some time into the contract, asbestos not identified during the management survey is discovered and work is halted. Or it is discovered that sub-contractors have been pulling out partitioning constructed from asbestos insulating board for the last week, exposing themselves and a number of other contractors to asbestos and spreading contamination throughout the building.

The priority of course is to resolve the immediate problem. The client instructs the principal contractor to engage a licensed asbestos removal contractor (LARC) and get the site cleared. The LARC arrives on site, provides a quote and informs the contractor that work cannot start until 14 days after the quote has been accepted because the HSE has to be given 14 days notification of the works. The actual asbestos removal and clearance procedures may take several weeks to complete.

Tracey Boyle MSc CFFOH, Honorary Secretary of BOHS

And so the recriminations start. The client says they provided information in the tender package. The principal contractor says that the information wasn't detailed enough. The sub-contractor says that his men have been exposed. HSE gets involved, solicitors get involved, expert witnesses get involved, and costs spiral while the project is delayed for several weeks or even months.

This type of situation arises because, on the issue of asbestos, all parties very often seem to have limited knowledge of it and its associated problems when it isn't considered properly at the planning stages of a project.

Under both CDM and CAR2012, the client should inform tenderers/contractors about asbestos on the site. Asbestos and the Control of Asbestos Regulations are specifically mentioned in the HSE's CDM ACOP. If the client doesn't know what asbestos is present on the site, they should commission a suitable and sufficient survey for inclusion in the tender documents. This will allow the tenderers to take account of asbestos when preparing the quote for the tender. What does suitable and sufficient mean? Refurbishment or demolition projects require a refurbishment/demolition survey.

This entails surveyors inspecting cavities and voids in a building; above suspended ceilings, inside ducting and risers, inside lift shafts and under floorboards. If a building is occupied, it may not be possible to fully complete a refurbishment /demolition survey at the pre-tender stage. If this is the case, then this should be acknowledged in the tender package and should be dealt with openly. A requirement of the tender should be that the principal contractor commissions a refurbishment/demolition survey prior to commencement of the construction phase. The costs and time associated with the removal of any additional asbestos found should be outwith the main tender pricing and timings, as until the survey is completed and an LARC has quoted for any removal required, no-one knows what the costs and time constraints will be.

Contractors tendering for a contract with insufficient information about asbestos will almost always under-estimate, if considered at all, the costs associated with asbestos removal because he doesn't want to add unknown costs to his tender as he will out-price the competition and lose the contract.

The client will almost always select the cheapest quote in a tender process. When the survey is commissioned, the client or contractor will select the cheapest surveyors and the survey may not be well-executed. The surveying contractors know this, so they put in a cheap quote. Because of this, the surveyors do not have enough time and they don't have the correct access equipment. If they had quoted for a reasonable amount of time and hiring in mobile access equipment or scaffolding, they

would have lost out to a cheaper surveying firm. And so it goes on. In an effort to control costs, asbestos is not looked for, or not found on site in a controlled manner, but is found or disturbed in an uncontrolled way during the construction phase of a project. This costs everybody a lot more, including financially, the reputations of all concerned, and in terms of health risks to workers.

"In my experience, the construction industry and its clients are less clear about the duties placed upon them in relation to the management of asbestos, even though asbestos is still to be found in about half a million commercial premises in the UK."

The solutions are relatively simple. They do involve slightly higher upfront costs, but these pale into insignificance compared to the costs of decontaminating a construction site and resolving legal disputes due the unbudgeted time and costs associated with asbestos found on site during the construction phase of a contract.

I would advise that:

- The client should commission a suitable and sufficient survey from a reputable firm of asbestos surveyors and include the survey report in the tender documentation, highlighting where asbestos removal will be necessary as part of the contract;
- Those submitting a tender should obtain quotes from reputable LARCs, including a time budget. These costs should be included in the tender;
- If the client/client's agent is unsure of costs they can get independent quotes from LARCs. Tenders with very cheap asbestos removal budgets should be rejected;
- The client should insist that all contractors and sub-contractors working on their project have received asbestos awareness training;
- Construction site managers should receive training in asbestos management so that they have a better understanding of asbestos surveys and how to interpret the information presented. They should also have an understanding of asbestos removal contracts;
- The principal contractor can move the project forward once the asbestos has been removed, but all contractors should remain vigilant for other ACMs. When a building is being demolished, ACMs may become apparent that were not accessible even during the most vigilant refurbishment/demolition survey.

BOHS qualifications in asbestos (the P400 series) are respected and recognised worldwide. They cover both theoretical and practical asbestos training and are aimed at individuals who need to demonstrate a level of training and competence in order to be able to carry out risk assessments of asbestos containing materials. For more information visit www.bohs.org/education ■

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Construction dust: high risk, low risk?

Terry Slater, Director of SMH Training & Scientific Services UK LTD highlights the dangers of construction dust and solutions to reduce the risks...

An estimated 5.5 million workers are exposed each year to hazardous gases, vapours, and airborne particles, and many of these workers are from the construction industry. The HSE has identified three main types of construction dust:

- **Silica dust –** Respirable Crystalline Silica, or RCS, is very fine silica dust often released during cutting, drilling and grinding of materials like sand, sandstone and granite, as well as concrete and mortar;

- **Wood dust –** Working with wood or wood-based products, such as MDF and chipboard, is a common task on construction sites, but the dust produced can be harmful;

- **Non-silica dust –** Something of a catch-all for other dusts found in construction, this can be produced when working with products such as gypsum, cement, limestone and marble.

Other airborne particles that construction workers could be exposed to include:

- **Asbestos fibres –** Banned from use in the UK since 1999, asbestos removal is heavily regulated to control the risks of exposure to this hazardous particle which is found in many older buildings being demolished of refurbished;

- **Lead dust, fumes or vapours –** Stripping old lead paint is one way in which workers in construction could be exposed to this toxic element.

It's a dusty job, but someone has to do it

All too often, dusty work in construction is unavoidable. However, there are several simple ways in which a construction worker's exposure to it can be limited:

- Before the work, training can ensure that workers understand the risks of exposure to construction dust and the appropriate controls to protect

themselves and their colleagues. Methods of working can be adapted to reduce the levels of dust created, including using different materials or different types of tools;

- During the work, control measures such as on-tool extraction and water suppression can stop dust before it gets into the air. Using the appropriate PPE and RPE can protect workers. Choosing, properly fitting and using the appropriate RPE can reduce the amount of dust breathed in. Many types of dust can also be harmful to the skin, so PPE such as disposable coveralls can also be an important control measure;
- After the work, properly disposing of contaminated RPE and PPE can reduce the risk of construction dust being carried off-site and contaminating workers' homes and other public spaces, and in some cases, such as after the removal of asbestos-containing materials, decontamination facilities such as showers are a necessary step.

Why take the risk?

It is estimated that there are currently approximately 12,000 deaths each year due to occupational respiratory diseases, including cancers, asthma, COPD, allergies and sensitisation, and silicosis, and many of these will be attributable to construction dust. The health problems associated with breathing in construction dusts can be slow to manifest, but are often debilitating or even fatal. Even short durations of exposure can add up over years of construction work, so it is vital that all exposure is carefully managed and workers are protected from breathing in any potentially harmful dusts. ■

Sources:

www.hse.gov.uk, especially www.hse.gov.uk/statistics/causdis/respiratory-diseases.pdf and www.hse.gov.uk/pubns/cis36.pdf.

www.citb.co.uk/health-safety-and-other-topics/health-safety/construction-dust-partnership/

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Demolish and reuse

PBC Today highlights the benefits of re-using waste from demolition...

The construction industry is the UK's largest consumer of natural resources, using over 400 million tonnes of material per annum. The construction industry is also responsible for some 120 million tonnes of construction, demolition and excavation waste every year – around one third of all waste arising in the UK. An estimated 25 million tonnes of this waste ends up in landfill without any form of recovery or reuse. More efficient use of materials would make a major contribution to reducing the environmental impacts of construction including reduced demand for landfill and depletion of finite natural resources. This would also contribute to the economic efficiency of the sector and of the UK as a whole.

Research by WRAP has identified the important contribution that designers can make in reducing waste is through design. WRAP has developed a number of exemplar case studies on live projects, working with design teams to identify and build the business case for action around Designing out Waste. However, when it comes to deconstruction and demolition it is worth noting guidance related to civil engineers specifically.

WRAP developed a specific technical solution for demolition and site clearance[1] to ensure that the most is made from the Designing out Waste Principle: Design for Reuse and Recovery. The technical solution can be used for the development of site infrastructure, capital utilities, bridges and structures, airports, highways, other project types where demolition of existing buildings or structures is required. For the purposes of this article we will examine material from the demolition of existing structures that can be processed on site to provide recycled aggregates that can be used in the new construction. The benefits include:

- Producing recycled aggregates on site is preferable to importing them as it is generally cheaper;
- Recycled content increases the recycled content of the scheme;

- Time has to be allowed to maximise the recovery of materials, but this may save time in the construction phase as a supply of aggregates will be available on site;

- The carbon footprint is reduced compared to sending material off site and importing aggregate;

- Reduced traffic to and from the site, with associated reduction in congestion. Reduced resource depletion.

However, all relevant environmental permits/licenses and exemptions and planning permission must be in place and attention must be paid to the fact that producing recycled aggregates on site may increase the noise from the demolition activities.

A pre-demolition audit should be carried out to ensure maximum value is obtained from the demolition materials. Soft materials should be stripped out before demolition to avoid contamination of the recycled aggregates with timber, plastic, plasterboard and other unsuitable materials.

Production of recycled aggregates should be carried out in accordance with the WRAP Quality Protocol for the production of aggregates from inert waste (available at www.aggregain.org.uk) to ensure the recycled aggregates meet the relevant standards and are fully recovered from waste.

The ICE Demolition Protocol can be used to track the recovery of materials from the demolition phase and their incorporation into the new construction. The WRAP guidance document The efficient use of materials in regeneration projects, available at www.wrap.org.uk/construction gives guidance on linking demolition and new build, including links to the ICE Demolition Protocol and Site Waste Management Plans. ■

[1] WRAP technical solution: http://www.wrap.org.uk/sites/files/wrap/Civils%20%20Demolition%20and%20site%20clearance.pdf

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Training for success at the National Construction College

The latest training courses on offer at the National Construction College are outlined here by Chris Blake, Curriculum Development Manager (Plant) at the CITB...

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JCB backhoes now have servo controls similar to tracked and wheeled excavators so it's now easier to get carded on both. The new 15 day course (14 days training plus 1 day testing) costs £3100 with eligible employers able to reclaim £1640 in training grant (£50 per training day, £410 for successful

completion of each of the two practical tests plus £60 for successful completion of each of the two theory tests). Successful candidates will qualify for a CPCS Red Trained Operator card. The combined courses are available at our Bircham, Ashbourne and Coleg Menai sites and are in partnership with JCB – to book a place call 0344 994 4433 or visit citb.co.uk/training .

Tractor training- dust suppression
With the agricultural tractor now a common feature on sites with water bowser and sweeper brush attachments let us train your operators to counteract this ever increasing problem. From the general construction site to road expansion projects both your personal workforce, the general public and passing motorists will benefit from dust suppression management providing a clean and effective working site environment.

Our NCC training packages cover all aspects of tractor utilisation including bowsers with hydraulic coupling systems, attachments requiring three point linkage and power take off coupling systems and additional trailed implements via both draw bar and pick up hitch devices. Full duration novice courses comprise of four days training with assessments on day five, additional short duration courses are available on request and we will be more than happy to discuss your current experience levels if required.

Chris Blake
Curriculum Development Manager (Plant)

Excavator Banksman training
NCC has responded to industry needs by identifying a gap in training relating to employees fulfilling a Banksman role while in conjunction with excavators. A new programme, Excavator Banksman Roles and Responsibilities, has been developed and the inaugural course, run in Scotland, has been successfully completed. The course received positive feedback from the attending delegates including Robert Cormack of Morrison Construction who said: "This is a good course, suitable for all staff, trainees or experienced colleagues who have picked up bad habits over the years".

The two-day course is intended for delegates wishing to work within close proximity to mobile construction plant machinery. Willie Aitken, Technical Manager for Morrison Construction, who was instrumental in working with NCC to develop the course commented: "Going forward it is hoped that this training course will become an industry standard; leading to more relevant training focused on the tasks and precautions we actually undertake while using excavators on site." ■

citb
National Construction College

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Guiding a high level of competence

A new guidance document clarifying issues around plant operator competence is highlighted here by Construction Plant-hire Association's Kevin Minton...

Construction plant, in particular mobile plant, has the potential to cause fatalities and serious injury. Consequently it is essential that people who operate construction plant are competent to do so.

An industry group – led by the Construction Plant-hire Association (CPA) – has recently published a new guidance document aimed at clarifying issues around plant operator competence. The guidance document is now available for download from the CPA website at www.cpa.uk.net/sfpsg .

The duty to ensure that plant operators are competent rests with their employer and the process of ensuring competence requires cooperation between employers, training providers and operators, all of whom have a significant part to play in the process.

Many organisations see training and possession of a card as a proxy for competence; this is a dangerous assumption. It may indicate a general level of ability to operate plant but does not take into account the difficulty of the task, the complexity of the environment or the experience of the operator. These all have a bearing on the successful management of the task.

The new document is intended to provide good practice guidance on the management of the competence of plant operators, clarifying methods for employers to manage, develop and record their employees' competences and meet their duties under the Health and Safety at Work etc Act, CDM and PUWER. Relevant issues around "Familiarisation" are also in scope.

Achieving the necessary competence to carry out a particular task is a four stage process, which is described in detail in the document. The use of an employee's portfolio of training and experience evidence is also covered.

"The duty to ensure that plant operators are competent rests with their employer and the process of ensuring competence requires cooperation between employers, training providers and operators, all of whom have a significant part to play in the process."

Because plant operators are frequently put to work and controlled on site by someone other than their actual employer, the roles and responsibilities of Principal Contractors and employment agencies are also covered within the document, together with guidance on communication and cooperation between these parties.

HSE and CITB were key participants, and a wide range of plant trade bodies was involved, together with contractors, and training organisations. The guidance is consistent with research work commissioned recently by CITB and HSE to update and extend the 2011 report on "Routes to Competence in Construction".

Heather Bryant, the then HM Chief Inspector of Construction, said "The advice in this document is straightforward, comprehensive and easy to adopt. It has been prepared by industry representatives to demonstrate realistic means of complying with

legal duties. However, following the guidance is not compulsory and may go further than the minimum you need to do in order to comply with the law. I thank those who have been involved in its preparation and commend the guidance to anyone who employs people who work with construction plant and those with an interest in such matters."

The new guidance was written to help promote understanding and sharing knowledge in an area which is often seen as difficult to discuss. I thank those industry bodies and individuals that were involved in its preparation – the strength of the guidance is founded on their experience and cooperative input.

The closely related issue of fitness to operate is addressed in the Strategic Forum Plant Safety Group guidance on Medical Fitness to Operate Construction Plant, which is also available to download from the CPA website. ■

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Construction Business Growing? Make Sure Your Insurance Still Fits

The Construction Industry in the UK is growing well and many companies have full order books for the next 9 or 12 months.

Demand for good contractors to do the job is now outstripping supply. This means that having gone through a period of immense pressure where customers could really turn the screw on price, contractors can now increase margin slightly and accept a contract on their terms rather than be forced to take it simply to keep the wolf from the door.

The array of contracts that are coming on stream now also means that some contractors are taking on types of jobs that they may not have done for a few years. This could be either because they weren't profitable enough or that these types of jobs simply weren't there in the downturn.

Overall this is great news for contractors, for the construction industry and because construction is one of the key drivers of our economy, for the UK.

One area of concern that JCB Insurance Brokers actively address with our customers, is making sure that as a business grows and evolves, the insurance protecting that business also grows and evolves to make sure it still fits. If it doesn't fit, it won't do the right job.

You need to deal with an Insurance Broker that understands and recognises this and will proactively ask you the right questions. It's all too easy to overlook this important issue when you are focussed on running a growing business, so it's vital that your Insurance Broker has his finger on your pulse.

There are a lot of things to think about, but your Insurance Broker should understand this and guide you through the process. These are some examples of things to consider :-

- Has the business grown – if so, how do you see this continuing into the next year?
- If the business is growing rapidly, don't wait until renewal, review mid-term?
- What type of work are you now doing? If there's a change, your current insurance policy might need amending to make sure you're covered
- Are you spending a lot more on hiring Plant in? If so, your Hired In Plant Insurance might need updating
- Are you hiring in different types of kit? Mobile Cranes or Crushers might be excluded for example so this needs addressing
- Are you digging down deeper than normal? Are your depth limits still adequate?
- Building retaining walls now? Does you're policy exclude sheet piling?
- Are you using more Bona Fide Sub Contractors to complete parts of the contract? This needs recognising in the insurance.
- Have you invested in more kit? This needs to be amended

Overlooking something may have potentially disastrous consequences for your business if something goes wrong. For example an insurance claim might not being paid if what you were doing falls outside the scope of the policy or a claim payment might be significantly reduced if you've failed to keep on top of the extra plant you've been buying.

A growing business is a great thing, but it needs good, honest insurance advice and protection that will do exactly what it needs to do, if it's needed. If you and your Insurance Broker have not kept on top of it with regular conversations and reviews to make sure your insurance still fits, you could end up with a growing pain that you really don't need.

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JCB Finance's nationwide field force is able to offer a local service in tune with local conditions.* Our aim is to help you preserve your vital working capital whilst spreading the cost of machinery acquisition in the most cost effective and tax efficient manner. After all – you wouldn't pay your staff three years wages in advance so why do the same for your plant – paying cash won't make it work any harder on day one. In 2012 we financed 52% of all JCB machines sold in the UK.

We offer the full suite of asset finance options from Hire Purchase through to Leasing. Some of these have unique features and benefits to suit the construction industry. Our finance options are not restricted to JCB equipment but are also available for other new non-competitive machinery and all used machinery plus cars, 4x4's, commercial vehicles, access equipment and a whole lot more.

JCB Finance Key Stats:

- Total lending 1970-2012 – just over £8.0 billion
- Total lending in downturn (2008-2012) – c. £2.75 billion plus 4,604 new customers
- Many reports show that SME's have found it hard to access traditional sources of lending but in 2012 our lending grew by 31.7% with total turnover of £748 million
- In 2012 a total of 22,236 assets across 16,654 agreements were financed
- In 1993 we entered the Local Authority market lending c. £270m to date – current balances with 158 different Local Authorities
- Asset mix – JCB 62% and Others 38%
- In 2012 JCB Finance provided 21.3% (some months touching 40%) of all HP and Lease finance in the UK construction machinery market (according to Finance and Leasing Association asset finance statistics).

* JCB Finance Ltd is regulated and authorised by the Financial Conduct Authority. JCB Finance only provides asset finance facilities to businesses in the UK.

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Building Regulations

Any person carrying out a building project that aims to create something new, or extend an existing building, has to comply with Building Regulations. The following summarises each regulation and includes a link to each approved document.

Part A – Structural Safety

Part A aims to ensure the integrity and stability of a building: loading, ground movement and disproportionate collapse must be addressed.

Part A covers technical guidance concerned with the requirements in regards to structural safety and incorporating any changes arising as a result of the Building Regulations 2010.

This includes the July 2013 amendments that came into force on 1 October 2013.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/parta/documenta

Part B – Fire Safety volume 1 & 2

This section covers the technical guidance contained in Part B (Approved Document B) of schedule 1 of the Building Regulations concerned with the requirements in respect to fire safety.

Each volume deals with 5 specific areas:

- Means of warning and escape;
- Internal fire spread (linings);
- Internal fire spread (structure);
- External fire spread;
- Access and facilities for fire and rescue services.

Volume 1 – Dwelling Houses

This is the recent edition of Approved Document B – Volume 1: Dwellings. It supersedes the original 2006 edition by incorporating the changes made as a result of the Building Regulations 2010 and Building (Approved Inspectors etc) Regulations 2010. This is Volume 1 of the revised Approved Document B and should be used with Volume 2 for all applications received after 6 April 2007.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partb/bcapproveddocumentsb/bcapproveddocbvol1/

Volume 2 – Buildings other than dwellings

This is the current edition of Approved Document B – Volume 2: Buildings other than dwellings. It incorporates amendments made to reflect any changes arising as a result of the Building Regulations 2010. The changes mainly reflect regulation number changes as a result of re-ordering. There have been no amendments to the substantive requirements in Schedule 1 (ie Parts A to P) of the Building Regulations.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partb/bcapproveddocumentsb/bcapproveddocbvol2/

Part C – Site preparation and resistance to contaminants and moisture

The aim of Part C is to ensure the health and safety of the building's users with regard to the effects of pollution and contaminants. In addition, emphasis is given to resistance to moisture in terms of providing a barrier against ground water and the weather.

This current reprint of Approved Document C – Site preparation and resistance to contaminates and moisture, incorporates amendments made to the 2004 edition. This includes the July 2013 amendments that came into force on 1 October 2013. This reprint further incorporates editorial corrections and amendments.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partc/documentc

Part D – Toxic Substances

Part D examines the potential of cavity wall insulation to release toxic fumes into a building. The Document stipulates that fumes should not penetrate occupied parts of the building, and only where a continuous barrier is used, may potentially dangerous substances be used.

This current edition of Approved Document D (Toxic Substances) has been updated and replaces the previous 2002 edition.

It incorporates amendments made to reflect any changes arising as a result of the Building Regulations 2010. The changes mainly reflect regulation number changes as a result of re-ordering. There have been no amendments to the substantive requirements in Schedule 1 (ie Parts A to P) of the Building Regulations.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partd/approved

Part E – Resistance to the passage of sound

This document deals with 4 major areas including:

- Protection against sound from other parts of the building and adjoining buildings;
- Protection against sound within a dwelling house;
- Reverberation in common internal parts of a residential building;
- Acoustic conditions in schools.

This current edition of Approved Document E – Resistance to the passage of sound, has been updated to incorporate amendments made to reflect any changes arising as a result of the Building Regulations 2010.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/parte/approved

Part F – Ventilation

The Part F document states that ventilation is the removal of 'stale' air from a building and replacement with 'fresh' outside air. This of course assumes that the outside air is of reasonable quality.

The Document states that ventilation is required for one or more of the following purposes:

- Provision of outside air for breathing;
- Dilution and removal of airborne pollutants including odours;
- Control of excess humidity (arising from water vapour in the indoor air);
- Provision of air for fuel-burning appliances (which is covered under Part J of the Building Regulations).

This 2010 edition of Approved Document F – Ventilation has been updated and replaces the previous edition.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partf/approved

Part G – Sanitation, Hot Water Safety and Water Efficiency

New requirements set out within the document include:

- Cold water supply;
- Water efficiency;
- Hot water supply and systems;
- Sanitary conveniences and washing facilities;
- Bathrooms;
- Food preparation areas.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partg/approved

Part H – Drainage and Waste

Part H states that adequate drainage systems must be provided in order to promote both personal and environmental health. Also highlighted, is the importance of a working sewerage infrastructure and maintenance, along with pollution prevention.

There are 6 main sections to Part H:

- Foul water drainage;
- Wastewater treatment systems and cesspools;
- Rainwater drainage;
- Building over sewers;
- Separate systems of drainage;
- Solid waste storage.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/parth/approved

Part J – Heat producing appliances

Part J is concerned with all heat producing appliances that could produce health and safety hazards such as fire, explosion and carbon monoxide poisoning. Appliances such as boilers, room heaters and oil tanks are included, with the addition of liquid fuel storage systems.

There are 6 main sections to these regulations:

- Air supply;
- Discharge of products and combustion;
- Protection of building;
- Provision of information;
- Protection of liquid fuel storage systems;
- Protection against pollution.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partj/approved

Part K – Protection from falling

Part K is concerned with the health and safety aspects of areas such as stairs, ladders and barriers and also addresses the risk from falling. This edition has been updated by combining Approved Document N: Glazing and also some overlapping guidance that is in Approved Document M: Access to and use of buildings respectively.

This document deals with 6 main areas including:

- Stairs, ladders and ramps;
- Protection from falling;
- Vehicle barriers and loading bays;
- Protection against impact with glazing;
- Additional provisions for glazing in buildings other than dwellings;
- Protection against impact from and by trapping doors.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partk/approved

Part L – Conservation of fuel and power

Part L specifically refers to thermal efficiency standards and affects insulation and heat loss, aiming to improve the low-carbon efficiency of buildings. The changes listed in this document for Approved Documents L1A, L1B, L2A, L2B are made to take account of a recast of the European Energy Performance of Buildings Directive (Directive 2010/31/EU).

This document has 4 different parts to it:

- L1A – Conservation of fuel and power (New dwellings)
- L1B – Conservation of fuel and power (Existing dwellings)
- L2A – Conservation of fuel and power (New buildings other than dwellings)
- L2B – Conservation of fuel and power (Existing buildings other than dwellings)

To view all the documents click below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partl/approved

Part M – Access to and Use of Buildings

Part M aims to provide inclusive access to, and circulation within all buildings, giving particular emphasis to the requirements for facilities and disabled people.

It covers 4 main areas:

- Access and use;
- Access to extensions to buildings other than dwellings;
- Sanitary conveniences in extensions to buildings other than dwellings;
- Sanitary conveniences in dwellings.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partm/approved

Part N – Glazing – Safety in relation to impact, opening and cleaning

Part N deals with all aspects of safety relating to glazing, with added requirements related to safe access for cleaning windows aimed to reduce the risk of injury when cleaning glazed surfaces, and the safe opening and closing of windows.

The 4 main areas deal with:

- Protection against impact;
- Manifestation of glazing;
- Safe opening and closing of windows, skylights and ventilators;
- Safe access for cleaning windows etc.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partn/approved

Part P – Electrical safety – Dwellings

Part P aims to reduce the number of domestic accidents, deaths and fires arising from electricity. It is also seen as a way to improve the competence of those undertaking electrical work.

This edition:

- Reduces the range of electrical installation work that is notifiable;
- Installers who are not a registered competent person may now use a competent person to certify work as an alternative to using building control;
- The technical guidance throughout now refers to BS 7671:2008 incorporating Amendment No 1:2011.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partp/approved

Building Regulation 7 – Materials and workmanship

This document requires that any building work shall be carried out with proper materials and in a workmanlike manner. It reflects the full implementation of European Regulation 305/2011/EU-CPR covering construction products referred to as the Construction Products Regulation, from 1 July 2013

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/workandmaterials/approved

Index

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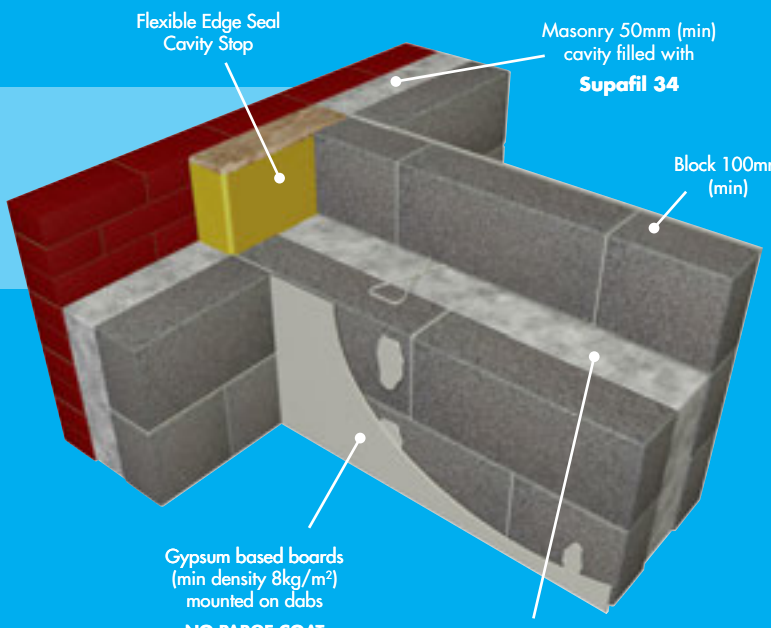

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http://www.robustdetails.com/TheHandbook/RobustDetail/E-WM-28

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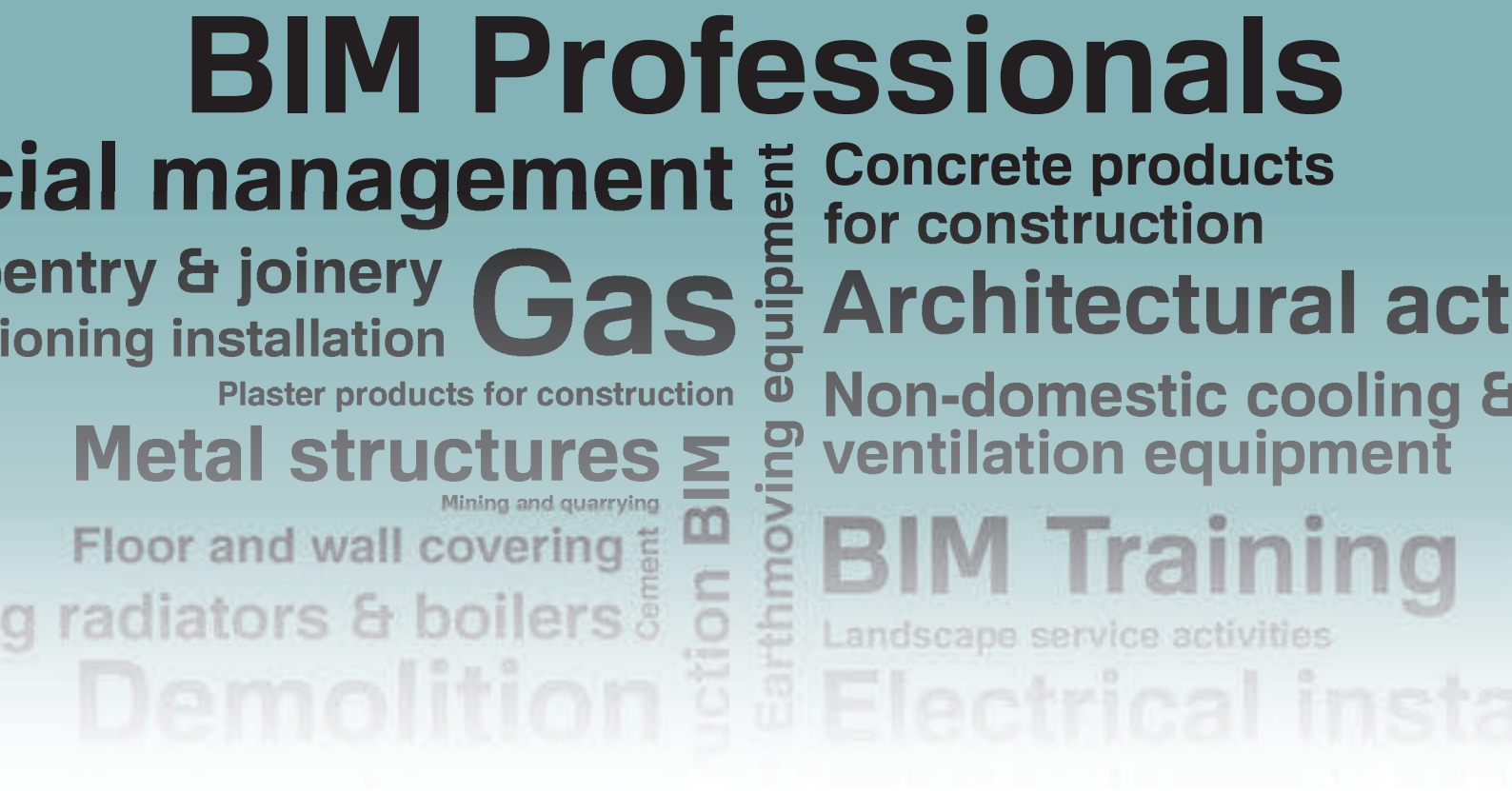

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