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PLANNING & BUILDING CONTROL TODAY

IN THIS ISSUE

Covering 190 pages, this issue details topics from debunking the land-banking myth to the latest report on the construction equipment sector. Highlights include:

Peter Hansford – Government Chief Construction Advisor

Stewart Baseley – Executive Chairman at HBF

Gareth Brown – Programme Area Manager at WRAP



The case for insulating party cavity walls

Nick Ralph from the Mineral Wool Insulation Manufacturers Association (MIMA) examines the solutions available to meet the Part L requirements...



Inclusive design: Time for access for all

Alexandra Smedley, Manager at NRAC calls for a new inclusive design overlay to improve access for all...

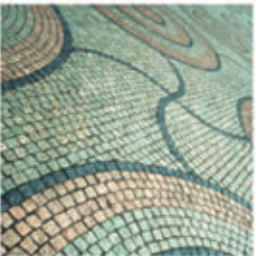


BIM: Simplicity and opportunity

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)

In the last edition of Planning and Building Control Today I wrote about the constant state of change that is the building regulations and how over my career there has never been a year without change. I am carrying on with this theme as I feel this is perhaps one of the biggest years for the regulations since the publication of the 1984 Building Act, functional requirements and the Approved Documents.

In 2011 the Welsh Government was given the responsibility for the building regulations in Wales. Up until this year any amendments they had made mirrored those in England, but this year they have published two major changes which set a clear distinction between the two countries for the first time. The requirement for fire suppression systems in high risk residential premises is a clear indication of the Welsh Government's intention to lead the world in fire safety, and the publication of Part L 2014 for Wales is another indication of their willingness to do things differently. Although the requirements for new housing are broadly the same as England, the introduction of consequential improvements for existing homes when being extended, goes where others have feared to tread.

In England the march towards zero carbon continues. The Zero Carbon Hub has just published its end of term report into the Design Versus As-built Gap and made recommendations on how it can be closed. The work is based on a combination of workshops and actual walk rounds of sites under construction

to identify short and long-term wins to ensure that what we design can, and is actually built on site. Well worth a read.

By the time you read this, the government will also have published two further sets of documents which will change the landscape of building regulations in England. The first is their response to the consultation on Allowable Solutions, the system whereby builders will be able to offset some of the carbon from new homes in return for a financial contribution towards carbon reduction measures elsewhere. The second will be the draft documents and legislation resulting from the Technical Housing Standards Review which will see over 100 separate standards reduced to less than 10, most of which will be enforced through the building regulations.

And all of this at a time when the industry is on an 'up' with more demand for resources and materials across the whole sector. NHBC is responding to the increased demand by embarking on its largest recruitment campaign in over 30 years. Over 100 new technical staff will be recruited in the coming months to not only cope with the upturn in new housing, but also to allow us to spend more time with our customers when they need us, providing advice and guidance, to ensure the quality of new homes is maintained and consumers are protected. ■

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Introduction

Welcome to the July edition of Planning and Building Control Today.

Reflecting Steve Evans' comments in his Foreword, the Zero Carbon Hub's interim report – 'Closing the gap between design and as-built performance' – is a key announcement this summer. In concluding the report, over 140 professionals across 90 companies collaborated to explore the causes of the performance gap, and to work towards developing cost-effective and realistic proposals that will help to close it. PBC Today have more details on the report in our 'Energy Efficiency' section.

Also within that section, we extensively cover the importance of insulation in addition to thermal bridging and bypass to improve the performance of a building. John Tebbit of Robust Details examines the challenges posed, and calls for a third party accreditation system to support and prove confidence in assessments.

Following on from the news that both The BIM Task Group and Peter Hansford (Government Chief Construction Advisor) will be in place for another year, we are assured of the continuing drive to reach Level 2 BIM by 2016. In our BIM section, Peter Hansford details the value of BIM for the UK in terms of the opportunity for reform, and also the economic success that is already forthcoming and which the construction industry can build on.

Penning a second article for PBC Today, David Philp looks at the role of SMEs and explains their key role in the UK's BIM journey. Legal issues are also highlighted in this edition, with an article from Andrew Marsh, Partner at DAC Beachcroft LLP discussing legal considerations and the importance of understanding the contractual framework of a BIM project.

Continuing with the theme of embodied carbon, PBC Today interviewed Gareth Brown, Programme Area Manager at WRAP. In the interview he sheds light on the Embodied Carbon Database – how it's performing, and what challenges remain.

In answer to accusations of 'land-banking', Stewart Baseley of the Home Builders Federation provides evidence debunking the myth, proving that where implementable planning permission exists, house builders are not sitting on land. Baseley argues instead for a sensible discussion about how we tackle the long-entrenched problems in the planning system – and where we are going to build the homes the country desperately needs.

This industry is always changing and moving forward, and PBC Today continues to track the latest developments. As always, we welcome feedback and ideas from you as the experts. ■

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The Pyramus Party

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On the 20th March 2014 we held the 40th Anniversary Conference of the Pyramus & Thisbe Club. It was held at the Institution of Civil Engineers, Great George Street, London. The venue holds 240 delegates and was sold out 6 weeks before the event – in fact we had a waiting list which was closed when it got to 30. It is a members only event. It is held every other year and whilst it is held in London many members travel quite some distance to attend. Michael Kemp, the current London Chair ran the morning session and I as Chair in waiting, ran the afternoon.

Our various speakers were introduced by sporting commentators, Andrew Schofield and David Moon, to add an informative yet entertaining start to each session.

The day started with Alan Gillett, a founder member, giving an insight into when and why the club was started and by whom. In 1974 there was a committee formed and 100 members allowed to join. It should be remembered that at that time it was the London Building Act 1937, for which the clue is in the name! The Act went nationwide in 1996 and was then renamed.

'What is a land surveyor' was next up with David Powell giving an insight into the life of a land surveyor and his travels across the world, to countries that you would never imagine there being boundary disputes. It is a shame to think that it is a dying breed.

We always enjoy a legal update and to hear the latest opinions on particular issues.

James Beat and Richard Webber gave an informative joint talk on 'Appeals' and 'Injunctions' with a snooker theme. Of course we all know that lawyers look for positioning as part of their game plan, so that was most apt. It was also useful for surveyors to understand the process of both matters and the costs that can be incurred and what happens with those costs ie who bears them.

Piling Techniques cover a wide variety of issues and Derek Glenister covered them all in great detail, including whether or not some of the types involve excavation and should be notified or not.

Along with myself, Hugh Cross, David Moon, Ashley Patience and Chris Zurowski then entertained the delegates with a pre lunch slot focused around obscure party wall situations. Warring neighbours, deep basements, access to carry out the work, attending with police, selecting the third surveyor were just a few of the topics covered.

Lunch was a jovial affair centred around a buffet sit down lunch. As always the staff are always very well organised and the varied menu and quality of the food well received. It is quite a feat to ensure that 240 people all have enough to eat.

The grave yard slot after lunch was filled by William Minting and Mikael Rust with Alistair Redler acting as 'ref' to ensure that the topic of 'There is devilry in the detail' was kept in line.

Edward Cox and Nick Isaac did battle over Awards with the pitfalls and the different

formats and clauses and the pitfalls from a Surveying and Legal perspective.

Two of the younger surveyors, Jack Norton and Stuart Cobbold, talking about their experiences of becoming party wall surveyors and some of their concerns.

I started the round up to the day presenting the new P&T ebook which Adjacent Digital Politics Ltd have produced; David Moon updated on Whispers, the success of evening events and the Subterranean Development Bill; Andrew Schofield updated us on the Boundary Dispute Resolution Bill and Michael Kemp rounded up the event with a summary of what we have achieved as a branch.

All of the speakers have been asked to write articles based on their talks for the next edition of Whispers. So if you are interested in reading what they really had to say, then please contact me or another member of the Pyramus & Thisbe Club and sign up today!



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A land banking myth

House builders have been battling against the myth of land banking for some time. The evidence provided here by Stewart Baseley, Executive Chairman at the Home Builders Federation explodes that myth...

Accusations of “land hoarding” or land banking have long been used as a stick with which to beat house builders.

To inform the debate, HBF recently undertook a major survey comprising results from 23 members who together build around almost 40% of all the new homes in Great Britain, and that have some 220,000 plots in their ‘land banks’.

Of their plots just 4% were on sites with an implementable permission where work on site had not yet been started – an incredibly low figure that supports what we have been saying for years and totally debunks the accusations being made.

4%, equates to 8,300 out of over 220,000 plots that were ‘oven ready’, or what could be described accusatorially as a land bank and not underway. Even extrapolating this out to get a rough picture for the

entire industry only gives us 22,000 plots – around the number of homes we need to be building each month to begin plugging the housing shortage.

The key statistic in my view was that over a quarter were plots with outline consent only. This is where the real focus should be, looking at how we speed up the planning system so that these plots can come forward. Our survey revealed nearly 60,000 plots stuck at outline stage and if you applied this figure on a proportional basis it implies the whole industry has over 150,000 homes in the planning system with an outline consent that is not yet implementable.

Of the rest, the vast majority, 63%, were on sites where work was already underway. Another 2% of plots were on sites that were not currently viable.

Housing development is a long and complex process. From initially identifying a potential land opportunity,

through to completion of the first homes can take years. As a result, home builders need to have an adequate supply of land in the pipeline to responsibly manage their building programmes. A more accurate, and certainly less emotive term for land banks would be “land in progress”.

It is reasonable to ask how much “land in progress” a house builder needs. Experts who have studied this suggest it needs to be at least three years supply. Local authorities are required to have an identified five year land supply, so they should actually be able to identify land for around 600,000 homes at today’s building rates, or well over a million homes if we are to meet future housing requirements, many of which should have some form of planning permission.

Looking at it logically, with Help to Buy driving demand, why on earth would house builders, who only realise profit if they develop housing, sit on land?

With buyers eager to buy new homes, all the evidence now shows that builders are building out existing sites more quickly and so want to get onto new ones sooner. Sitting on land in the hope that inflation might compensate for the impact such a decision would have on the builder’s return on capital employed makes very little business sense.

Of course, our statistics only bear out what numerous other independent or official investigations have shown. Kate Barker, in her seminal review of housing supply ten years ago, dismissed the proposition that builders land banked; as did the Calcutt Review in 2007. Then in 2008 as part of its exhaustive study of ‘Home Building in the UK’, the OFT said ‘it could find no evidence that home builders hoard land’, a view supported in more recent reports by Savills, and Molior. Yet despite the sizeable, and growing evidence base, the myth persists.

The statistics we compiled largely reflect those in reports issued regularly by the Local Government Association (LGA). However, the LGA’s press statements, and indeed the subsequent media reporting, fail to distinguish between implementable and outline permissions, or the plots on sites already underway, with everything conveniently labelled ‘land bank’.

Their report shows that 167,000 of the 323,000 plots they measure are on sites already under construction. On their measure, if you get planning permission for a site with 15,000 homes, until that last house is built and sold, all those 15,000 remain in the ‘land bank’. So in reality, the figure they claim to be a ‘land bank’ contains thousands of homes that are not only built, but indeed have been sold and are being lived in.

Similarly their ‘land bank’ figure fails to differentiate between an outline and an implementable permission. So in many instances the site’s developer is being accused of sitting on, or hoarding land which they cannot get onto as they are awaiting Reserved Matters to be approved, or for the local authority to discharge pre-commencement conditions.

When you look beyond the rhetoric and consider the realities, the facts are quite clear. House builders do not sit on land that has an implementable planning permission.

The challenge is to address the real problems that restrict the amount – and speed – of land coming through the planning system. With Help to Buy stimulating demand, now is the time to step up supply and the planning system needs to react accordingly if continued increases are to be sustained.

Rather than focus on the sites not being built, I would welcome the same passion and energy being devoted to a sensible discussion about how we tackle the long-entrenched problems in the planning system – and where we are going to build the homes the country desperately needs. ■

.....
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Support for local developers and new home buyers

As developers face the ongoing challenges of the property market it is obvious that many will be looking for support not only in land acquisition – or even disposal – but also in finding potential buyers. Yet, whilst there is often support out there, it can come from an array of individual providers many of whom have little or no contact with each other and which ultimately leads to confusion – and even wasted time and money – for the developer.

With this in mind, LSL Property Services plc (LSL), the parent company of estate agency networks Your Move and Reeds Rains and one of the UK's leading providers of residential property services, has decided to draw on its 'all round' expertise with a dedicated Land and New Homes division.

James McAuley, Director of LSL Land & New Homes explained: "Having listened and dealt with many developers across the country LSL and our associated estate agency brands, such as Your Move and Reeds Rains, know only too well that, despite the more positive market conditions, that some developers continue to face challenges – more recently in connection with land acquisition – and it's because of this that we've made a concerted effort to respond to their needs. As a highly respected company LSL has a vast array of expertise and can easily and effectively provide integrated solutions for the benefit of developers and customer alike. Under the LSL Group umbrella, for example, we have companies offering valuation services, rental portfolio services, asset management services,

estate agency services as well as, now, land specialists to offer support in finding land and in selling it."

"LSL Land & New Homes cautiously welcomes the Chancellor's recent announcement in connection with a renewed focus on Brownfield sites, recognising that it could indeed go some way to producing the additional housing output we need to achieve a balanced housing market. At the same time, however, we fully appreciate that there is every likelihood that the policy will predominantly help London and the South East rather than the UK as a whole."

"Our land team is actively involved in the sale of both Brownfield and Greenfield sites, and recognises the important differences between the two. The team regularly advise vendors/developers of the vital differences that exist, thus ensuring they focus upon the aspects that ultimately produce the results they require. Viability is the key to unlocking Brownfield sites and any planning initiatives that help to accelerate the planning process and eliminate planning delays is one we fully support. Therefore, it was most pleasing to observe the fact that Eric Pickles made express reference to a quicker and easier system – let us hope this aspect is given the credence it deserves, as our experience suggests that the planning system is becoming ever more challenging as the housing market continues to improve"

With more than 90 years combined experience, the dedicated team, working with their

estate agency colleagues, can offer national coverage coupled with in-depth local knowledge. They can carry out a land valuation and assess commercial viability, assess the planning position and determine suitability, or otherwise, of existing planning consents, as well as carrying out land assembly and negotiating land purchase from third parties.

Their expertise also extends to mixed use schemes, residential schemes and challenging Brownfield sites, and the team now benefits from the experience of an RICS qualified chartered surveyor.

If you'd like to find out more details about how LSL Land & New Homes can help you or you would like to contact one of their new Land Managers, simply access the website on www.lsl-landandnewhomes.co.uk or call 01709 830757(*)

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The planning politics of tall towers: legacy or lunacy?

The Skyline campaign reignited the tall towers debate, but sensationalist press coverage drowned out issues such as sustainability and affordability. Suzan Yildiz, Head of Planning at Olswang LLP explores the true dilemma: how to enable urban development whilst ensuring a sustainable and affordable legacy for London's communities...

The Skyline campaign¹ calls for coordinated planning of London's tall towers in response to a development pipeline of 236 tall buildings (over 20 storeys). The sensationalism of dubbing a concentrated cluster on the South Bank the 'Gotham City Skyline'² would be easy to dismiss, but for the credible signatories to the campaign: Sir David Chipperfield (architect), Anooosh Kapoor (sculptor), Allain de Botton (philosopher) to name a few.

The campaign has gathered momentum. Its coincidence with the Farrell Review also suggests a resurgence of the role of design in place-making. Post-recession architecture is reasserting a social responsibility with an emphasis on a double (socio-economic) bottom line.

However, on any objective view, planning is more than good design or any constituent parts. The architecture-led debate does not reflect the crucial role of planning in sustainable place-making. This article explores the sustainability and affordability concerns³ at the heart of the debate and the potential role of a skyline commission.

Are concerns about the design legacy of tall towers warranted?

The highest concentration of tall towers are in the Tower Hamlets (23%), Lambeth (13%) and Southwark, Greenwich and Barnet (8%). 80% of London's towers have a primary residential use⁴. Growth is expected in Shoreditch, the South Bank, Nine Elms and potentially in new opportunity areas.

Individual tall-buildings are often of exemplary or high design standards and attract distinguished architects: The Shard (Renzo Piano), South Bank

Tower (Kohn Pedersen Fox), Elizabeth House (Sir David Chipperfield), Nine Elms (Foster + Partners), One Blackfriars (Ian Simpson) and Twenty Blackfriars (Wilkinson Eyre). The planning and design merits are generally subject to extensive independent scrutiny: the Shard, One Blackfriars and Twenty Blackfriars all achieved consent following lengthy public inquiries.

Experts suggest the architectural mischief lies in the cumulative effect, but the planning policies and development tools to address cumulative impacts already exist. The London and local plans include comprehensive policies requiring exemplary design. Some authorities historically used locational policies only permitting tall buildings at points of 'landmark significance' effectively dispersing clusters⁵. Whether there is virtue in clusters or landmark locations entails technical design and planning judgements relative to the local context. The London Plan does not deal with strategic need, quantum or location of tall towers, although, designation of opportunity areas foreseeably channels growth and intensification.

The cumulative impacts of schemes are also tested through strategic or environmental impact assessments, at policy stage and on individual applications. In short, there is no policy lacuna. The real question is: how effectively are planning policies and development tools applied?

How are local planning authorities coordinating concurrently emerging developments?

It is instructive to consider Southwark and Lambeth where recent clusters of tall towers are located.

Southwark responded to concurrently emerging tall

towers on the South Bank by adopting the Blackfriars Road Supplementary Planning Document, 2014. The emphasis is on coherent public realm, building heights, town centre and business uses and effective partnerships. Similar policy and partnership-led approaches were deployed on the Canada Water and Aylesbury regenerations. Southwark's stance is that the future could include tall towers, providing all the relevant issues are addressed and stakeholder partnerships created.

Nine Elms envisions exemplary places, an international business district and centre for the arts, accommodating 16,000 new homes, 30,000 people and 25,000 new jobs. Lambeth and Wandsworth Councils coordinate the regeneration through the Nine Elms Vauxhall Partnership: chaired by their political leaders and comprising key developers, landowners, the GLA and TfL.

Yet fresh from the labours of promoting Elizabeth House in Lambeth, Sir David Chipperfield considers backing a Skyline Commission is "like voting for good weather"⁶.

Design legacy: towards a Commission?

Coordinating holistic design, public realm, transport and environmental impacts is challenging when faced with concurrent developments and cumulative impacts. Greater efforts are possible at strategic level to coordinate tall towers, but also major urban developments. Policy guidance and partnership working are good practice. Consistency between developments in emerging clusters is also possible by structuring permissions and conditions, and planning and infrastructure agreements back to back. However, good practice is not systemic but down to individual diligence or cooperation between promoter and local authority teams. Widespread adoption of Community Infrastructure Levies (CIL) may phase out some of these issues, but established delivery of infrastructure through CIL is some years off.

In the meantime, a Commission could have merits but its remit requires careful thought. Would it solely have a design remit or a multi-disciplinary approach? Act in an advisory or statutory capacity? Would it be independent or an extension of Mayoral powers?

A Commission tasked solely with design would not add much to planning decisions. An advisory or consultative body could add value by coordinating design policies at the crucial plan-making stage, ensuring an effective interface between strategic, local and inter-borough levels. Such strategic coordination could cascade into local plans and determinations on individual schemes. Implementation through multi-stakeholder partnerships and good practice in structuring consents and planning agreements would follow suit.

To ensure political and industry buy-in, a Commission must avoid the pitfalls associated with Design Review Panels. 'Design by committee' is perceived by authorities and developers alike to lead to disparate views and cause delays.

Sustainability

Overseas investment provided a capital injection during an unprecedented recession supporting London's growth and development pipeline: infrastructure, construction, retail and hospitality jobs. Yet increasingly overseas investors have become a scapegoat in the tall towers debate suggesting the business model is unsustainable. The argument goes that investors drive demand for super-prime units in tall towers, thereby inflate values and reduce affordability. The discussion of affordability below suggests this is an incomplete and simplistic picture at best. The London prime market is only 8%, perhaps surprisingly 88% of prime-buyers acquired a main residence and 68% were UK based⁷. A prime-homes market will exist as long as London is, and wishes to remain, a global centre for commerce.

So what are the headline sustainability issues? Statute and the National Planning Policy Framework place sustainability at the heart of local plans and development schemes⁸. No definition is offered, but the Brundtland Commission's definition⁹ is:

'Sustainable development must meet the needs of the present without compromising the ability of future generations to meet their own needs...'

Having worked on several London towers and

regeneration schemes, even advisers (not just decision-makers and promoters) grapple with tough sustainability questions in forming planning and legal judgements (whether acting for developers or authorities): *"Are the tall towers and urban schemes of today more sustainable than the 70s cities in the skies? Are we confident the sins of the fathers will not be visited on the children?"*

Sustainable development has a three-dimensional role: economic, social and environmental. It is essentially planning for economic growth, planning for people and planning for places, today and for the future. Sustainable development necessarily involves a balancing exercise between competing needs. It is incumbent on politicians, decision-makers and promoters to pose these questions and collaboratively find the right balance.

A sustainable balance – planning for growth, people and places – can be struck for tall tower schemes, but the balance need not be identical in each case. As well as being of exemplary design, to maintain stakeholder support tall towers need a viable future anchored in the existing or new community. They can be catalysts for regeneration, through economic benefits and effective integration into host communities. Despite government interventions in planning contributing to a 'them and us' culture, public and private sector collaboration is growing. The discourse and approach of developers has shifted to 'creating communities' (Berkley Homes) and 'engagement' (Taylor Wimpey). Tony Pidgley, Chairman of Berkley Homes said this in response to criticism of St George's Wharf (Vauxhall):

"Originally we were just builders, just putting stuff up... now we think about the community, we look at the site and its surroundings and think about what will make it better."

The community benefits, which contribute to Londoners' acceptance of iconic buildings, can range from new housing options, inclusive public and cultural spaces, employment opportunities, public access to iconic buildings and a rippling regenerative effect for neighbourhoods. Provided these buildings do not become inaccessible citadels, London's host communities have a stake in their legacy.

Affordability

Throughout 2014, the IMF warned that demand stimulus, such as Help to Buy, threatened housing affordability and economic recovery. The Mayor's ex-deputy Nicky Gavron has also questioned whether these tall towers ease London's housing crisis. [A Savills study](#) indicates potential over supply of super-prime, and an estimated under-supply of 6,500 homes per annum in mainstream and affordable markets¹⁰. There is a clear need and opportunity to increase supply at the affordable end of the market.

Are we therefore witnessing a new housing bubble, a structural market or policy problem? The structural imbalance between supply and demand is a moot point when Berkley Homes urge the Government to hike interest rates and scrap Help to Buy. Diminishing homeownership and growth of the private rented sector (PRS) are indicators of structural market problems, but according to research by [Knight Frank](#)¹¹ the rental revolution began years prior to the 2008 recession.

In policy terms, mixed and balanced communities are imperative to avoid the historic social deprivation associated with single-tenure housing. Despite our policy aspirations, cross-subsidising affordable housing within single cores in tall towers is a challenge. Even if the technical and practical problems of accommodating mixed tenures in single cores can be overcome, it is of little practical effect in prime locations. The so called affordable housing element – shared ownership or affordable rent – remains unaffordable relative to local income levels. Young Londoners especially shun unaffordable homeownership for private rental. Yet, Dr Margaret Theseira suggests PRS too is stressed due to under-supply, high values, poor conditions and management by small scale¹², rather than institutional landlords.

Existing policies and solutions have not bridged the affordability gap between super-prime and diminishing supply in mainstream and affordable markets. Tall-towers epitomise this tension, but it is myopic to attribute undersupply, policy and market dysfunctions to tall towers. The inability of successive administrations and planning policy are also accountable for systemic under-provision of housing. The answer is neither

to halt tall towers nor scrap affordable housing policies, but to find new housing products and viable delivery models.

Southwark has led the charge on these issues. They adopted the earliest viability reviews to unlock stalled development by deferring affordable housing with claw-back options as cyclical economics improved. Southwark also created a Direct Delivery Fund, from payments in lieu of affordable housing to tackle the supply and affordability problem without stifling high quality development which brings other worthwhile economic, infrastructure and community benefits.

Architecture critics highlight [One Blackfriars](#) provided only 65 homes, starting at £1.08m, but omit mention of the £29m (index-linked) affordable housing pot towards Southwark's Direct Delivery Fund. Local authorities can deliver a higher quantum, bespoke and better-value mix of affordable tenures than is feasible in prime-developments, through their own programmes (direct delivery) or grant-funding other affordable schemes in the area from donor sites (such as One Blackfriars). The challenge is keeping communities balanced by ensuring a nexus between donor scheme and host community, yet there are mechanisms to achieve this. Direct delivery funds are not the entire solution, but they are credible in circumstances where affordable housing is not feasible on-site.

Greater collaboration and innovation, rather than expecting a recovering market to deliver social housing would yield better outcomes. It is time for the public and private sector to create new affordable products and business models to address the problem of under-supply. For example:

- The growth of the PRS is a market indicator of unmet local needs. It is a credible alternative to home-ownership. To enhance affordability means to increase supply. Councils can enter joint ventures or public private partnerships with developers combining land transactions and shared expertise to supply new housing for local needs;

- Local authorities can and do have tools at their disposal to increase supply (albeit in small but meaningful increments) through payments in lieu towards direct-build funds, a softer approach to public land disposals, dove-tailing local development orders with strategic reviews of proposals maps or designations;
- Release of public land and green belt need to be serious options, we can still control urban sprawl whilst releasing land for development;
- Developers must balance commercial interests with sustainable community benefits and anchor tall towers in existing or new communities;
- The Government must acknowledge the inextricable link between housing, growth and jobs, and invest in housing as it does in nationally significant infrastructure projects.

Conclusions

Place-making is fundamentally about people, not just places and economics. The Skyline campaign deserves credit for stimulating the debate, but design is not the sole issue. However exceptional the design, a sustainable legacy for places entails viable uses, anchor occupiers and creating a community. Overseas funding propped-up London's economy at a critical time and gets unfair flack, but markets are cyclical. If investors exit London PLC, posterity and people power will judge not only the legacy or lunacy of these buildings, but those in a position to do better. This demands the attention of politicians, communities and developers with a long term investment in London.

To maintain stakeholder and community support for tall buildings, the politics of planning need fine-tuning. The affordable housing crisis is not attributable to a surge of super-prime or overseas buyers. The mismatch between land supply and policy aspirations is the core problem. More is needed to bridge the chasm between prime-developments and diminishing housing options.

The Government missed an opportunity through its reform agenda to find new solutions to the old supply and affordability dilemma. Regeneration-led authorities like Southwark and Lambeth should by and large be commended. When many downed-tools post-recession, some authorities explored viable and pioneering solutions to simultaneously unlock unviable development and deliver social housing. It is nothing short of amazing that the Government is only belatedly promoting a [self-build vanguards](#) programme.

Developers need reassurance that strategic coordination will mean greater certainty, not complexity or delays. Development funding remains scarce, credit-worthy developers willing to take development risk remain key to growth and housing delivery. Promoters of tall towers are increasingly aware they need to demonstrate longer term regenerative benefits: infrastructure, jobs, apprenticeships, new housing options, a contribution to place-making and a viable future for tall buildings.

“to maintain stakeholder support tall towers need a viable future anchored in the existing or new community. They can be catalysts for regeneration, through economic benefits and effective integration into host communities.”

The private and public sector need to collaboratively explore the sustainability and affordability problems to find solutions. Political leadership at local and central levels is imperative for new and workable housing models. PRS offers a viable business model and housing for local needs with the potential to attract investment from institutional funds. Release and deregulation of public land and green belts is within the government's gift, but too piecemeal to have any meaningful effect. This could be effectively combined with the use of local development orders to improve supply (even incrementally). Dare I say it, the Government could invest in social housing in tandem with infrastructure achieving better gains for people, places and the economy. ■

¹ The Skyline campaign was launched in the Observer in March 2014

² See article “London's new towers creating a Gotham city skyline” in the Evening Standard

³ This is an opinion piece born of the recent debate, experience of and research into tall towers. A technical or academic exploration of sustainability is not intended.

⁴ See GL Hearn's Study of Tall Buildings

⁵ Southwark had such locational policies focused on points of landmark significance in historic local plans)

⁶ See article at (2) above

⁷ The World in London, 2014, Savills

⁸ See Paragraph 14 of the National Planning Policy Framework, introducing a policy “presumption in favour of sustainable development...” and the Planning and Compulsory Purchase Act 2004

⁹ This was given effect in Resolution 42/187 of UN General Assembly

¹⁰ The reference is to properties priced under £450 psft.

¹¹ See Figure 1 of Knight Frank's 2014 report “The Rental Revolution”

¹² See “Stressed: A Review of London's Private Rented Sector” (2013), Dr Margarethe Theseira

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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 Heinrich¹ and Lewin² 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 USA³⁻⁶. 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 it 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 environ-

ment 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 Marsh⁸.

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](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

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The biodiversity obligation

The obligation for local authorities to protect and conserve biodiversity spans all activities but faces key challenges. Peter Dorans, Corporate Relations Manager at The Wildlife Trusts summarises their unique approach to assist with the current situation...

Nature makes us feel better! Well-planned and thought-through development which integrates nature, bringing it into the everyday lives of those who will live and work there, will help to create attractive, healthier, wealthier and more sustainable communities. Communities whose local authorities properly value the natural environment in the planning system, and invest in getting the right advice and information, will reap the rewards.

Children will be happier – UNESCO consistently ranks our children as the developed world's unhappiest. Children tell us what will make them happier is access to natural spaces to play, learn, take calculated risks and develop self confidence. Adults also benefit from the natural world and wilder greenspaces. Wildlife Trusts projects are demonstrating the

therapeutic benefits of engaging with nature (wildlifetrusts.org/health_and_wellbeing). The contribution made by well-designed developments to coherent, joined-up ecosystems over large areas will improve our resilience to climate change and sustain the natural processes which underpin our economy and society.

Local authorities' obligation to protect and conserve biodiversity spans all activities. In the planning system it starts with the identification and exclusion from local plans of sites which are non-negotiable in terms of wildlife value. Proper scrutiny of individual applications to ensure biodiversity protection follows.

So, there is both opportunity and obligation. But in stark contrast, the statistics put forward by the



Photo: Sadie McGlone

ecological advice which the developer accesses and how they then go on to filter, interpret and present it. There are some tools such as BS42020 which at least standardises how information is presented, and subsequently used, but it is a guideline only, not an independently audited standard.

Responsible developers recognise that well thought through development has commercial and societal benefit. It's worth remembering the premium that properties built close to, and incorporating high quality green space can command. More important to their long term strategic development is that they demonstrate a track record of building high quality places for communities to thrive.

This gap isn't acceptable, but by ignoring it we would do ourselves, our children and grandchildren a huge disservice. This is the driver behind a new arrangement between The Wildlife Trusts and Willmott Dixon. Under the arrangement, which is unique in the industry, The Wildlife Trusts' network of professional ecology consultancies will work under a framework agreement to provide Willmott Dixon teams with independent advice from the outset of the planning process.

Association of Local Government Ecologists (ALGE) tell a story of failure by local government to invest in their own professional ecological advice. As they continue to bear the brunt of austerity, a chasm has opened between the advice and information needed by authorities in order both to fulfil their obligations and capitalise on the opportunities, and their access to that information.

The charitable and private sectors can only do so much. Last year, Wildlife Trusts across the UK (there are 47) influenced the outcome of over 3,000 planning applications in favour of wildlife. Indeed, the ALGE research suggests that some planners rely on our responses to planning applications in lieu of in-house ecological expertise. There are a handful of examples in which Wildlife Trusts act as the de facto in-house expertise under formal agreements, notably in Derbyshire. Outside of these agreements local charities, themselves under severe budgetary constraints, spend precious resource to ensure that planning authorities discharge their responsibilities and that the opportunities to secure gains for wildlife and communities are taken.

The dearth of in house ecological expertise places a heavy reliance on the quality and independence of the



Photo: Tom Marshall



Photo: Emma Bradshaw

The network of 24 Wildlife Trust Consultancies are independent of their parent Wildlife Trusts but share their many advantages – especially that they are experts with a profound link to the local natural environment, and the communities it supports on their patch. They will apply their expertise assessing the potential impacts of a development, identifying practical ways to avoid and mitigate damage, and helping Willmott Dixon teams to identify actions to achieve ecological gain e.g. through designing-in natural features which maximise the potential value to wildlife and communities.

By accessing this local expertise very early in the planning process, Willmott Dixon hopes to ensure that their planning applications will consistently offer the best outcomes for the natural environment. For the company this could mitigate the risk of time and money spent later in the planning process adjusting applications in response to objections. Sourcing ecological advice in this way supports local procurement aims. Crucially though, it is backed up by the wider network of consultancies operating within audited Health & Safety, Environmental and Quality Management Systems and is therefore as responsive and professional as any provided by centralised commercial consultancies.

In the longer term, profits from this consultancy work are gifted back to Wildlife Trusts and reinvested back into the long term protection and restoration of the natural environment. The relationship of consultancies to the Trust means that partnerships carry on through to the construction teams and ultimately to the final communities and businesses which occupy the developments.

This arrangement does not detract from or replace the need for Local Authorities to employ and recognise the value of their own ecological expertise, but reinforces it. Each sector has a part in the conversation about creating high quality, wildlife rich places that will leave a positive legacy for generations to come. ■

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Working through the diversity agenda

Ensuring diversity in the construction and property industry enables employers and clients alike to benefit from a breadth of experience. Here, Elspeth Burrage, National Chairman of Association of Women in Property outlines their work in this area...

The word 'diversity' is in danger of becoming one of those buzz terms like 'sustainable development' in the early 90's and 'BIM' in the past couple of years – one that everyone knows about, but which have become jaded through over use. That is in no way to diminish the diversity agenda; far from it. Women In Property (WiP) has long been a committed advocate of the quest for greater diversity in our industry, in a bid to break down the gender barriers.

Across all areas of property and construction and its professional disciplines, women are under-represented, as are those from ethnic minorities and those with disabilities, or those who aren't single-sex or private school educated. This might seem like a sweeping generalisation but unfortunately, the feedback we get suggests it isn't.

Thankfully things do seem to be changing; there is a growing realisation in business that, by ignoring these groups, they are missing a trick. Certainly, the conversations we have had over the past year or so, reflect a commitment to better understand the issues affecting these groups, to learn and to make change happen.

As one of my predecessors, Lynette Lackey, said, "Diversity makes for a better team. Few would dispute that bringing together different backgrounds, thinking styles, skill sets and genders creates a breadth and depth of expertise that employers and clients expect and deserve. Everyone wants the best people, regardless of gender, culture, ethnicity or creed."

As an organisation, we try to instill gender diversity at every stage of one's career. In fact, we start long



Elspeth Burrage, National Chairman,
Association of Women in Property

“Diversity makes for a better team. Few would dispute that bringing together different backgrounds, thinking styles, skill sets and genders creates a breadth and depth of expertise that employers and clients expect and deserve. Everyone wants the best people, regardless of gender, culture, ethnicity or creed.”

through a mentoring relationship will tell you what a difference it has made to them, from both a professional and personal perspective. Having someone help steer you through career issues, such as making yourself heard, getting that next promotion, or moving company is a vital tool for moving up the career ladder.

In this industry, the most pronounced fall-out for women is at mid-career. Last year we founded our own Mid Career Task Force, gathering useful insights on how to address the leaking pipeline of women in property and construction. We are now working with a number of organisations, advising them on how they can make a difference within their own structures, setting the wheels in motion for those setting out on their careers, those reaching the ‘mid point’ and those working towards senior management and the Board.

I’m proud that my own employer, DTZ, formed the Curzon Group, which was established to take a proactive approach in developing and retaining the best people. They didn’t set out to create special rules or quotas, but rather react to and encourage changes to traditionally accepted working practices to develop their talent pools. Isn’t this what diversity should be about?” ■

before the first salary slip arrives, by going into secondary schools, reaching girls at an early age to explain to them what they might be missing. If girls (and boys – we are inclusive) don’t know what careers are available in our industry, how will they ever find their way into it?

Go forward a few years and we bridge the gap between education and academia, through our National Student Awards for 2nd Year female built environment students. Regional and national finalists receive support and guidance from our members and we draw on our network to help secure work experience. Eight years down the line since we launched the Awards, and many of those former students are now successfully carving out their own careers.

Mentoring is a major WiP initiative that sits on our diversity agenda and one of which we are justifiably proud. You could argue that ‘mentoring’ is another of those buzz words, but anyone who has been

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Elspeth Burrage
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[www.twitter.com/WiPUK](https://twitter.com/WiPUK)



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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/>.



OKI

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ITS ALL IN THE DETAILS

Little things make big things happen

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.

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For more information visit www.cleverprinters.co.uk



Optional

| 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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A wider landscape for health and safety

Health, safety and environmental awareness are key issues for all in the construction sector. The British Association of Landscape Industries (BALI) outlines its course aimed specifically at those working in the land-based sector...

The United Kingdom Contractors Group (UKCG) has officially recognised BALI's ROLO (Register of Land-Based Operatives) Health, Safety and Environmental Awareness Course under its UKCG Health and Safety Training Standard.

The UKCG's recognition acknowledges that this industry-specific Health & Safety standard, to which BALI members and the wider landscape industry have been working, has received wider acceptance as a credible standard by the commercial sector. The ROLO Health, Safety and Environmental Awareness Course is a pre-requisite for anyone in the land-based sector applying for a LISS/CSCS skills card.

Wayne Grills, BALI's Chief Operations Officer, believes the ROLO course's recognition vindicates BALI's investment in developing and promoting the course and achieving its adoption as a pre-requisite of the LISS/CSCS skills card: "This is great news and will reassure employers and their employees of the value to businesses and individuals of industry-specific health, safety and environmental awareness training."

The ROLO course is administered by BALI and is delivered by BALI-approved training providers across the UK (visit www.bali.org.uk for a current list of providers). Whilst it is a 'stand-alone' course suitable for anyone entering or already working in the land-based sector, more importantly, and alongside a minimum Level 2 qualification or equivalent in an appropriate discipline, it must be successfully completed before anyone can apply for a skills card under the LISS (Land-based Industry Skills Scheme)/CSCS scheme.

A LISS/CSCS card proves the holder's occupational competence, at the level determined by the holder's qualifications, to work in sectors scoped by the

scheme, specifically:

- Landscape construction and horticultural landscape maintenance;
- Arboriculture;
- Pesticides;
- Ecology and Environmental Management;
- Amenity.

Different coloured skills cards are issued according to the holder's level of verified competence e.g. trainee, qualified worker, supervisor, consultant etc.

Increasingly, LISS/CSCS cards at the appropriate level are being demanded by client officers in the public and private sectors before staff are allowed onto construction and project sites to carry out operations.

BALI administers both the ROLO course and the LISS/CSCS skills card scheme and can provide advice and information to employers, employees and the self-employed on the course and how, with successful completion, this can be the first essential step to obtaining a valuable LISS/CSCS skills card. ■

Further information can be found on the BALI website under the Quality Assurance tab. Alternatively, speak to Jessica Consolaro on 02476 690333 or email Jessica.consolaro@bali.org.uk.



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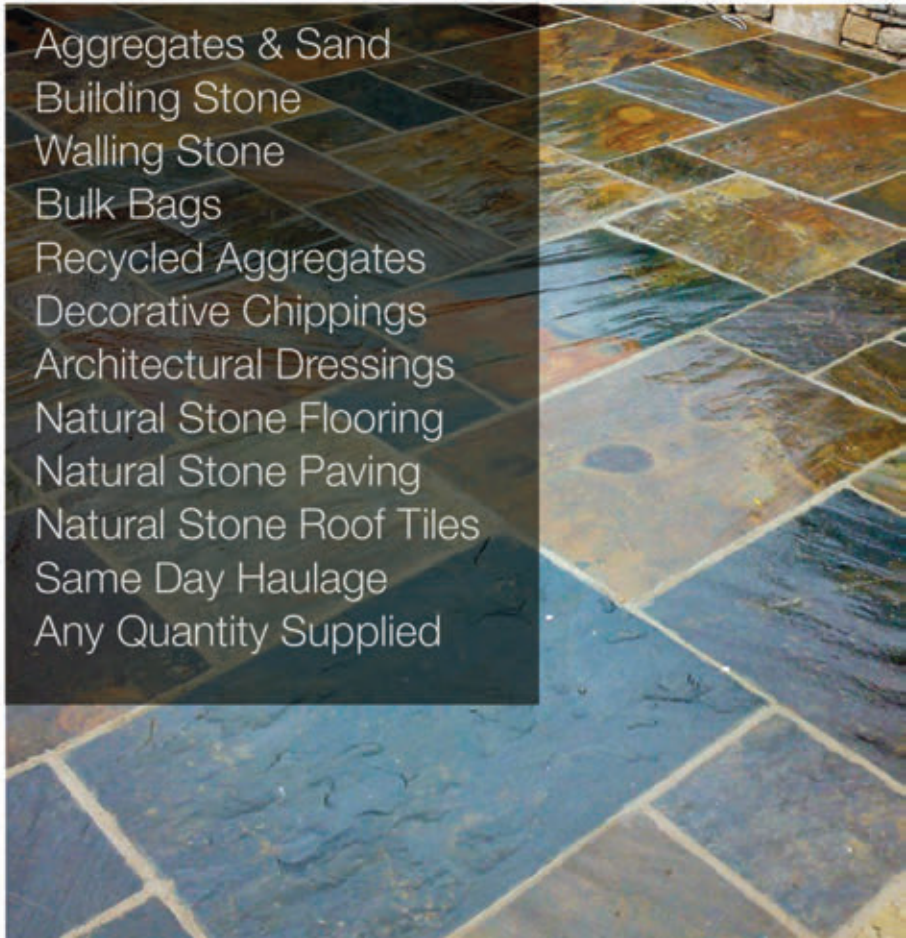
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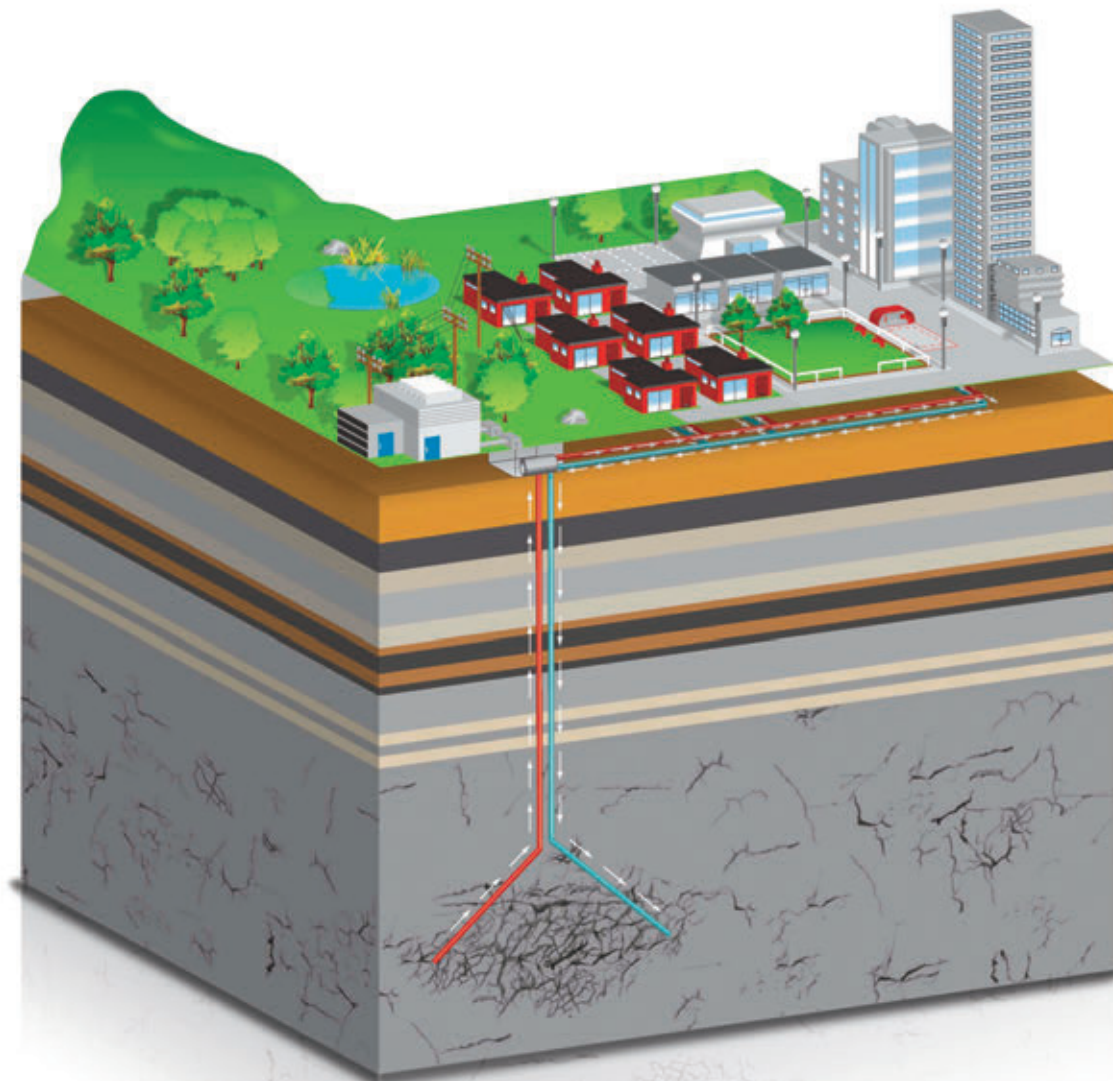
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Tapping into the district heating network

An innovative district heating network project aims to dig deep to power Stoke-on-Trent's economic renaissance. Andy Platt, Cabinet Member for Green Enterprise at Stoke-on-Trent City Council outlines the project and its benefits...

The whole of the UK faces a mounting challenge to protect consumers from the ravages of a volatile energy market while simultaneously increasing the use of renewable power and cutting carbon emissions. Stoke-on-Trent's circumstances are no different.

It would be easy to argue that, having invested tens of millions of pounds in retrofit energy saving improvements for local homes in recent years, as well as supporting the creation of the multi-million pound Centre of Refurbishment Excellence in the city, the council has done all that it could to meet this challenge – particularly at a time when financial

constraints pose a threat to our core services. But we are determined to go much further than this and bring to fruition our own unique vision for localised energy security.

The scale and urgency of the escalating energy price challenge have forced us to look in greater detail at how the city's energy needs are likely to shape our communities and our economy. Stoke-on-Trent has traditionally been home to some of the UK's most energy-intensive industries, and although the commercial landscape has changed significantly in the last 30 years, reliance on plentiful energy is still an important economic consideration.

In the absence of clear national consensus, we have resolved to take matters into our own hands to shield vulnerable businesses and communities from the excesses of the energy market. Faced with an increasingly stark choice between capitulation and innovation, we opted for the latter.

Surveys indicate that Stoke-on-Trent is situated about two kilometres above a naturally occurring source of geothermal energy, enabling us to tap into heat from within the Earth’s crust to warm buildings on the surface.

We are confident that, with financial support from the Department for Energy and Climate Change, we will be able to tap into this abundant renewable energy source, pump it to the surface and distribute the heat direct to the city’s university and further education colleges, commercial and business premises, council-owned buildings and homes.

According to our projections, from 2018 locally produced geothermal energy will supply heat at a predictable, attractive price on an 11 kilometre network spanning the city centre, the Etruria Valley business park, the University Quarter and Stoke town.

The availability of up to 45 gigawatt hours of renewable energy will cut Stoke-on-Trent’s carbon emissions by an estimated 12,000 tonnes a year. But more importantly, it will also offer unparalleled energy price stability, removing much of the uncertainty which continues to dog the wider domestic energy market.

Earlier this year, our vision for local energy security took a huge leap forward when the city council, along with our partners in Staffordshire County Council and the Stoke-on-Trent and Staffordshire Local Enterprise Partnership, signed a momentous city deal with the government worth about £113m over the next 10 years. The centrepiece of this deal was a £20m government funding pledge towards the £52m cost of creating the District Heat Network.

The early instalments of this financial support are already trickling down from Whitehall, enabling us to focus on strengthening our business case so that we can put our proposal to the market in order to line

up potential commercial partners with the necessary expertise. This partnership approach will enable us to access and extract the subterranean hot water and, by means of a heat exchanger, use it to energise a district heat network that will serve buildings in the public and private sector.

There are still many steps to go through in the process of getting the District Heat Network up and running, and every groundbreaking infrastructure project encounters its fair share of challenges on the journey from concept to completion. However, it is heartening to note that Stoke-on-Trent secured the second largest injection of government funds out of the 20 wave two cities – particularly considering that bids were assessed against their feasibility and commercial viability, as well as expected environmental and social benefits.

We believe that our proposal has the potential to transform our city’s economic prospects and help to accelerate Stoke-on-Trent’s renaissance as an emerging national hub for renewable energy research and innovation. What is becoming increasingly clear is that ministers share our view and are responding to the city council’s growing confidence in its regeneration strategy.

The District Heat Network is about far more than securing short-term energy price stability. The success of this unique project will send a clear signal to potential investors, central government and regional drivers of growth that Stoke-on-Trent is an innovative city with the focus, the leadership and the will to take control of its own destiny and claim its rightful place as a future economic powerhouse. ■

.....
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ENERGY

Evaluating the archaeology

Dr Gerry Wait, Director at Nexus Heritage considers what ‘evaluation’ means for archaeologists and planners alike...

Following on from the field survey stage is typically ‘evaluation’, termed by archaeologists in the sense that the work is intended to ‘evaluate’ the archaeology. This stage reveals possibly the greatest diversity of approach by archaeologists, including local planning authorities (LPA) and the organisations (often referred to by archaeologists as ‘contractors’) – and this is tied to slightly differing concepts of the purposes.

A decade ago, under PPGs 15 and 16, the purpose of an evaluation was to provide a LPA with information about the presence, character and importance of heritage, and to enable the authority to make an informed planning decision. In essence under NPPF this remains unchanged, albeit not so clearly expressed. Practice has evolved and in essence the test is more likely to be a ‘yes-no’ one: are there heritage remains present of such importance? Or are impacts arising from a proposed development of such magnitude upon such remains as to justify a planning refusal?

Some authorities, perhaps a majority, see the ‘evaluation’ as a means of answering the first part of the question, while others take the position that if a Desk Based Assessment (DBA) (plus perhaps APs and/or geophysics) does not reveal the presence or a high probability of very significant remains, a refusal is unlikely to be justifiable. Therefore, an evaluation becomes a tool for deciding in detail how to manage the impact to archaeology – and can be left to post-determination.

The IfA’s Standard and Guidance for Archaeological Field Evaluation (Nov 2013 revision)¹ defines an

evaluation as: ‘a limited programme of non-intrusive and/or intrusive fieldwork which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified area or site on land, inter-tidal zone or underwater. If such archaeological remains are present, field evaluation defines their character, extent, quality and preservation, and enables an assessment of their worth in a local, regional, national or international context as appropriate.’

The Standard and Guidance states that the purpose of an evaluation is to: ‘determine, as far as is reasonably possible, the nature of the archaeological resource within a specified area using appropriate methods and practises. These will satisfy the stated aims on the project, and comply with the Code of Conduct, Code of Approved Practise for the regulation of contractual arrangements in archaeology, and other relevant by-laws of the IfA.’

As the evaluation process moves from desk-based study to on-site work (geophysical survey, trenching or test pitting), the dialogue with the local authority archaeological adviser becomes even more important, to ensure that the work proposed is fit for purpose and that all of the relevant information will have been supplied to the planning authority before a decision is made on the development proposed.

In archaeological parlance most field work is undertaken by a relatively small number of generally larger organisations. This emphasises that this type of work requires a range of archaeological and aligned skills, and that this can really only effectively be deployed by larger organisations. The earlier stages in this



archaeological process can, and often are, provided by sole-traders or small specialist organisations (often called consultants within the discipline), but field evaluations require a diversity of skills, and a level of corporate infrastructure, such that small organisations find it difficult to be effective.

Evaluations are most commonly undertaken by the excavation of trial trenches or test-pits, initially using a mechanical excavator to remove turf and topsoil, and thereafter by hand excavation by archaeologists. Trenches are often about 2 metres in width (depending on the mechanical excavator) and may vary in length from 10 to 50 metres. Test pits are even more variable – 1x1 metres, 1x2 metres, even 5x5 metre dimensions are commonly deployed depending upon site conditions and the nature of the archaeological remains anticipated. Normally detailed hand excavation will be limited to what is necessary to produce the information to enable informed planning decisions, but many LPAs interpret this differently, seeing an evaluation like any other archaeological excavation, and thus require more and more detailed excavation, recording, and subsequent analyses.

This reminds us that archaeology is not a one size fits all standardised technique, and that there is inevitably considerable scope for professional judgement, and the careful developer will avail him/herself of appropriate expert advisors. The archaeologist who did the DBA may still be involved, perhaps over-seeing the process and providing continuity of advice, but will have been joined by a team of other archaeological professionals from one or many different organisations each with their own specialist contributions to make. As the diversity of works and techniques increases (and as costs inevitably rise) the need for expert coordination and interpretation becomes ever more important.

Evaluation marks an important change from the preceding stages – now there are artefacts, site records, photographs – all the components that archaeologists call ‘an archive’. Archaeological excavation is a professionally undertaken disturbance or even a controlled and partial destruction of parts of an archaeological site or asset, and what remains of the part disturbed are the records and the artefacts. There is therefore an ethical imperative on the part



of the archaeologist to analyse and interpret the results, and then to 'curate' the archive for the benefit of other researchers and archaeologists so that the information should not be lost. Field evaluations are therefore likely to be relatively costly exercises, and the work of analysing, interpreting, archiving and publishing the results, while not always very visible, may nonetheless be significant.

The link between the cost of field evaluations and the 'reasonableness' of local planning authority requirements throughout the planning process, is apparent and remains hotly debated.

There may be many outcomes of the evaluation process. First, and in some ways primary, is the provision of information for the planning process, and the results of the evaluation will form part of the suite of information that the local planning authority's archaeological adviser will use to provide advice on the planning application to the Planning Committee or officer that makes the decision. An archaeological report on this type of work often remains as 'grey literature' that is a limited print run report deposited in the authorities' Historic Environment Record, perhaps in local museums or record offices, and increasingly in on-line web-based report archive systems ².

However, Time Team again reminds us of the interest by the general public in the history of the places where they live, and thus the importance of designing archaeological works to do more than tick a box in a set of planning requirements. Post-Time Team local community groups are still interested in visiting and seeing, or even better participating in, and at the very least visiting exhibitions and reading about local 'digs'. Those commissioning archaeological field evaluations may well want to see that their financial investments provide benefits to both the development sponsors and to local community groups.

The mention of the costs of undertaking archaeology raises two important benefits of professionalisation that arise in the event of things going wrong. First, both Members and Registered Organisations of the IfA will carry appropriate insurances, although careful clients will want to ensure the detailed coverage is appropriate. Secondly, in the event of serious disputes, all MIfA's and RO's are committed to the IfA's Code of Conduct, and are therefore subject to disciplinary action where a client or member of the public considers that unprofessional work or advice has been given. ■

¹ <http://www.archaeologists.net/sites/default/files/node-files/IfASG-Field-Evaluation.pdf>

² <http://archaeologydataservice.ac.uk/archives/view/greylit/orhttp://www.oasis.ac.uk/>.

.....
Dr Gerry Wait
Director

Nexus Heritage and former Chairman Institute for Archaeologists, Chair of the Registration Committee (Organisations) for the IfA and current Co-Chair of the Committee on Professional Associations in Archaeology for the European Association of Archaeologists

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The National Planning and Building Control Directory

aims to be the one-stop-shop for anyone seeking help and advice or products and services from the construction industry.

In conjunction with the now strongly established 'Adjacent Planning & Building Control Today' digital magazine which carries heavyweight content from both the trade and government, this essential tool is already well on its way to being the most comprehensive guide currently available.

Having built a huge database of over 50,000 email contacts for the construction industry, the Directory is growing at a rapid rate with subscribers joining every day. It is now looking to market itself to end users via the strength of the magazine's content, search engine optimisation techniques, digital marketing and the strategic promotion of the Directory in key areas where people searching for information, or companies on planning and building control issues will be able to easily find, access, and utilise the directory.

Because of the size and cleanliness of its email database, the directory is also an obvious forum for business to business activity stimulating trade for large companies, SME's and smaller companies alike.

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WRAP up on the embodied carbon challenge

As the opportunities of addressing embodied carbon become more well-known, PBC Today speaks to Gareth Brown, Programme Area Manager at WRAP about the Embodied Carbon Database and the challenges faced by industry...

In an effort to address the embodied carbon (EC) challenge, resource efficiency experts WRAP (Waste and Resources Action Programme) and the UK-GBC (UK Green Building Council) launched the first publically available Embodied Carbon Database for buildings in April this year, during UK-GBC's 'embodied carbon week'.

The database has been created in the context of the partnership between industry and government to transform the construction industry – Construction 2025¹. The ambition is to reduce emissions associated with the industry by 50% by 2025, and the database should be instrumental in helping organisations by providing an essential source of data where people from the entire supply chain can benchmark building designs, and as a result, identify where carbon reductions can be made.

The Green Construction Board has set some very specific targets for measuring and reducing EC, laid out within its Low Carbon Route Map for The Built Environment², as adopted by government in its vision for the industry. The Route Map model shows that in 2010 operational carbon represented around 80% of emissions of the built environment, with EC representing 18%. However, the model shows a prediction that by 2050, EC is expected to be at 40%. Of course, we are addressing operational carbon quite well at the moment with Part L, solid wall insulation and the like, but addressing EC can make a huge impact on carbon emissions.

In the Embodied Carbon White Paper from Guy Battle, Director of Sustainable Business Partnership, he states that:

"Embodied carbon now makes up one of the largest proportions of carbon emissions of a building through its lifetime. For commercial offices over 40% of lifetime emissions are accounted for even before the building is occupied, and for some sectors such as industrial warehousing it is over 70% of lifetime emissions."

The Embodied Carbon Task Force which arose following the UKGBC Embodied Carbon Week with over 1000 attendees, is working to "build cross industry consensus on how embodied carbon should be measured and reported, and for Embodied Carbon to be included as an Allowable Solution within the definition of Zero Carbon Building regulations, for both Residential and Commercial Property such that the objectives of Construction 2025 and the Green Construction Board may be met".

Specifically the aim of the document is to deliver the following:

- Agreement and proposals for minimum standards for measurement and reporting;
- Proposed methodology for Embodied carbon as an Allowable Solution
- Identify gaps in knowledge and further work required;
- Develop a road map for delivery of Construction 2025 with respect to embodied and capital carbon.

Many people have suggested that EC should be included within the 'zero carbon' definition for 2019,

but it seems increasingly unlikely to happen. I asked Gareth Brown if this was a feasible idea. Not surprisingly, as we all heard in the Queen's speech, it certainly isn't on the table for 2016, but he did agree with Guy Battle in that "industry are keen to move forward in at least considering it as an Allowable Solution to 2019 and potentially to cement it into the definition as well."

"There's certainly good understanding in the product sector, and as we move forward, the understanding in the architecture community, the designers and the consultants, the contractors, and all the people that make up quite a complicated sector in construction will also increase."

In the interview with Gary Newman of the ASPB in the April edition of PBC Today, he outlined that the arguments surrounding an agreed methodology were not an excuse not to develop standards from which to include embodied carbon data. Brown added that the people involved in carbon profiling, making measurements and arriving at assessments, have all collaborated to inform the White Paper from Battle, proving that there is agreement and enthusiasm on how to take these things forward.

Brown highlighted that: "There are currently plenty of life cycle assessment (LCA) databases that provide detail and data. People are engaged in environmental product declaration and using the framework of the CEN TC 350. There are a number of developers in the commercial environment such as British Land, Derwent London and Land Securities that have contributed to the White Paper and have been undertaking assessments on some of their projects to get a better understanding of where they are".

The construction industry certainly faces challenges in incorporating EC into designs and building forms, and there is often a debate between the product sectors around the benefits of different construction products. Brown added that: "it's really about optimising the use of different products depending

on the type of building that is being built and the outcomes that people are looking for. If you look in the broader context of resource efficiency it's not about one thing being more important than the other, it's about optimising those choices to get the outcomes you're looking for. So, recycled content is important, as is low carbon and end of cycle recyclability. All of these things have a part to play, so it shouldn't be about one aspect that overrides another".

There are encouraging signs related to the European Directive CEN TC 350 (now a British Standard BS EN 15978) setting out a methodology for EC and whole life carbon analysis, in that many are starting on the journey. It is fairly early days but Brown appears optimistic: "There's certainly good understanding in the product sector, and as we move forward, the understanding in the architecture community, the designers and the consultants, the contractors, and all the people that make up quite a complicated sector in construction will also increase. There are some that are leading in these areas where it's very well understood, but it does take time. From a collaborative perspective, when it comes to data, BIM has a big part to play in this too.

"There are contractors out there at the moment mandating BIM on every project, whether it's a client requirement or not. BAM for example are doing this and are committed to deliver projects fully in that environment. Once you've started on this journey, then doing these sorts of things becomes a lot easier."

Many believe that only through legislation will industry really take on board the benefits of including embodied carbon in projects, and Brown admits it might be an option adding that "It will get more traction from those that are more forward thinking, involved, and understand the opportunity with what is happening already. They will do it because they see the commercial opportunity and the imperative to do this". Brown believes that how EC is incentivised is an important aspect and the database could certainly be used to inform the benchmark ranges if legislation came into being, by expanding our knowledge of EC for different building typologies.



Gareth Brown, Programme Area Manager, WRAP

So how is the database performing so far? "It's a couple of months since the launch and we are pleased with how it's progressed", Brown explained. There was a lot of interest before the launch, with quite a number of projects uploaded as data for the 'embodied carbon week' of events. We have people registering every day for access, and now have more than 230 assessments uploaded, and almost 450 queries have been run (queries are when a user has searched the database in some way to view the data, selecting the filters to determine which projects are displayed to them).

"Embodied carbon now makes up one of the largest proportions of carbon emissions of a building through its lifetime. For commercial offices over 40% of lifetime emissions are accounted for even before the building is occupied, and for some sectors such as industrial warehousing it is over 70% of lifetime emissions."

"Some people are using it to see if they can get some meaningful benchmarks from it to set project

expectations and quite a number of consultants are using the database to get access and information. The critical thing is that the more data that is entered, the more meaningful the benchmarks for the different archetypes will become, and the more useful it is for everyone".

EC is certainly gaining momentum within industry and some are clearly leading the way as mentioned earlier, but perhaps the benefits are not as widely known as they should be and better education within industry is required. Every year that passes only represents more emissions that could have been prevented, and the earlier the methodologies are recognised, the sooner we can reap the rewards. The EC database should go some way to achieve better, more robust knowledge and convince any 'nay-sayers' that action should, and can be taken now. ■

To get involved in the Embodied Carbon Database visit the site here.

¹ <https://www.gov.uk/government/publications/construction-2025-strategy>

² <http://www.greenconstructionboard.org/index.php/resources/routemap>



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YOUR ONE-STOP-SHOP PLANNING DIRECTORY

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Having built a huge database of over 50,000 email contacts for the construction industry, the Directory is growing at a rapid rate with subscribers joining every day.

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Efficient material use – the future for design?

By designing for minimum material in buildings, the UK construction industry could slash carbon emissions by 50%. Fran Sergent of the UK INDEMAND Centre at University of Cambridge outlines the latest research...

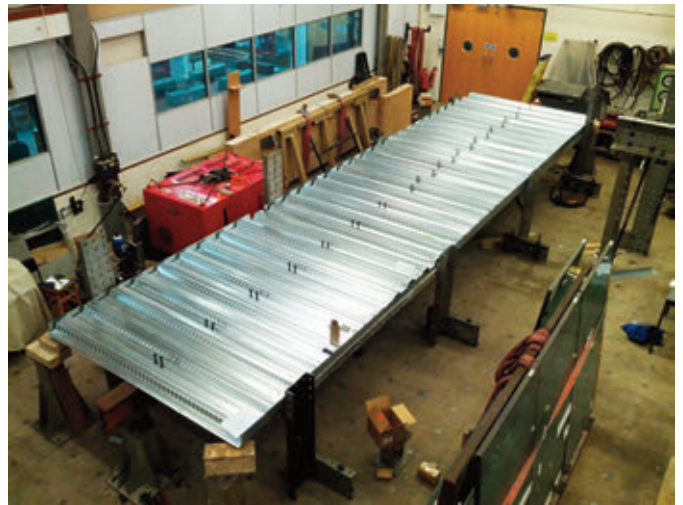
One third of global carbon emissions are from agriculture and land use while the other two thirds are from energy and processes. Of those two thirds, a third come from buildings, a third from industrial production and a quarter from vehicles. When researchers from the UK INDEMAND Centre started looking at industry, we found that five materials account for 56% of all industrial emissions. Steel and cement are the two largest portions and after them, paper, plastics and aluminium due to the energy intensive processes involved in production. Those industries already pay heavily for energy, and so industrial companies have focussed on reducing those costs to ensure they are now some of the most efficiently processed in the world. As a result, emissions cannot be reduced by energy efficiency at the supply side which means we need to consider options for reducing demand through material efficiency. The construction industry could slash its carbon emissions by 50% by optimising the design of new buildings, which currently use double the amount of steel and concrete required by safety codes.

One sixth of the world's CO₂ emissions arise from producing steel and cement, which are made efficiently, but are used very inefficiently, particularly in construction.

There are several strategies we can consider to reduce material demand in construction: avoiding over-design, extending the life of buildings and material re-use/substitution.

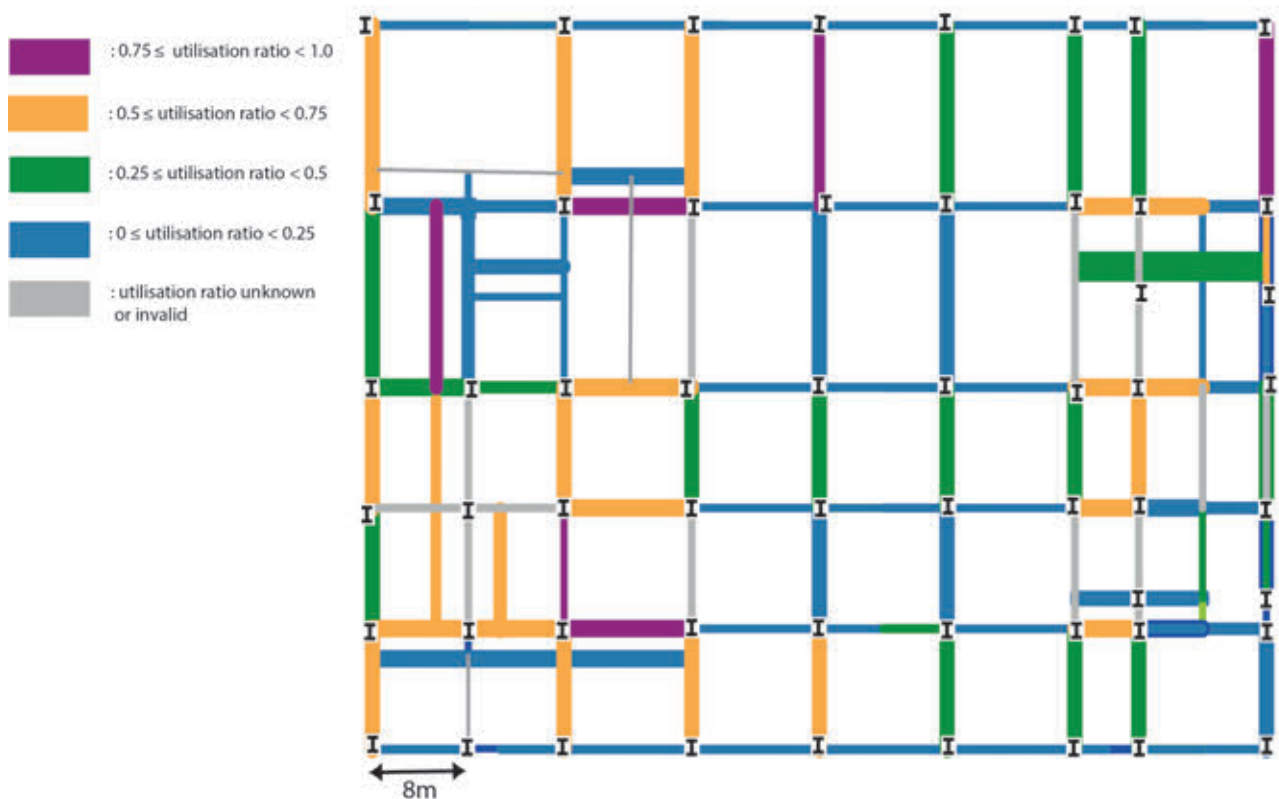
Purpose not surplus

In a recent paper published in the Royal Society Proceedings A, we analysed 23 recently built buildings



in London, and found that on average only 50% of the steel in their beams was utilised in meeting the standards. This means that multi-storey steel structures could, on average, be built with half the amount of steel and still meet the Eurocodes. This suggests that if we met the Eurocode requirements rather than exceeding them, and maintained buildings for their design life of 100 years rather than the current average of 40, we could meet the embodied emissions 80% reduction target set by the 2008 Climate Change Act.

However, demand for materials in construction today is driven largely by the relatively low cost of materials compared to labour in the UK: it is often cheaper to standardise a building than to design it efficiently. "Structural engineers do not usually design optimised structures because it would take too much time; instead they use repetition to decrease the cost of construction," said Dr Julian Allwood of the Department of Engineering, who led the research. He added that "this leads to the



specification of larger steel components than are required.” By designing for minimum material rather than minimum cost, steel use in buildings could be drastically reduced, leading to an equivalent reduction in carbon emissions, at relatively low cost.

Prolonging building life

In addition to designing for overcapacity, current buildings are maintained for only a fraction of their potential lifetimes and while many buildings in the UK could last for at least 100 years, they are replaced on average after 40. Our oldest buildings are treasured as parts of our heritage which motivates us to preserve them, but newer buildings are often demolished because they quickly lose their appeal or the function changes. Considering options for adding this complex cultural attachment to new buildings as well as adding flexibility for changes of use, such as the ability to deconstruct (at the design stage) could also prolong the life of the buildings and therefore the materials.

The average supermarket building in the UK is refurbished after 10 years and replaced after 20, often to allow a change of size or layout. The components are usually damaged in the process meaning that the materials have to be sent back to the start of

their lifecycle, which is a very energy intensive process. Could we instead build a supermarket from a prefabricated kit which could be demounted and simply rebuilt?

Alternative material options

Careful consideration of the materials we use in construction might lead to potential savings in embodied carbon through re-use or use of alternative replacement materials.

The construction team based at the UK INDEMAND Centre at the University of Cambridge, led by Dr Julian Allwood, have outlined these strategies in their new prospectus, available here: <http://www.ukindemand.ac.uk/sites/default/files/Reducing-Material-Demand-in-Construction.pdf> ■

.....
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The timber trail – ensuring sustainability

Proving that the timber used in construction projects is legal and sustainable is becoming a key factor. BM TRADA have now addressed this with FSC® Project Chain of Custody Certification, and here they explain the benefits...

The ability to prove that timber has been derived from well-managed sources is now a key factor in the specification of timber products. But when it comes to individual construction projects, the construction industry faces specific challenges when proving that the timber specified and supplied is from legal and sustainable sources. FSC Project Chain of Custody Certification has been designed as a mechanism for independently verifying the use of certified timber in a construction project, and allowing the industry to use the certification trademarks to promote their responsibly sourced credentials.

In this case study, Andrew Kinsey, sustainability director with international construction firm Mace, explains how the company worked with multi-sector certification body BM TRADA to achieve FSC Project Certification for the prestigious Park House development in central London.

Why Project Certification?

For Mace, the international consultancy and construction company, obtaining FSC Project Certification is a vital business tool as well as a key corporate environmental responsibility.

The company, which employs over 4,000 people in 65 countries, has seen increasing interest in sustainability among clients and the general public. The spotlight is falling more and more on the provenance of building materials and companies are under increasing pressure from consumers and government agencies to prove their green credentials. Certification that can clearly demonstrate this is essential in today's construction market.

At the same time, Mace has enshrined a strong commitment to sustainability as one of the firm's core business values. The business is proud to



work with forward-thinking customers and suppliers to achieve greater sustainability standards and project certification that reflects this.

When it comes to individual building projects, however, construction companies face specific challenges in proving that the timber specified and supplied is from sustainable sources.

In answer to this, Project Chain of Custody Certification has been designed as a mechanism for independently verifying the use of certified timber in a construction project and allowing the industry to use the certification trademarks to promote their responsibly sourced credentials.

There are currently two project certification schemes available: FSC (Forest Stewardship Council) Project Certification and PEFC (Programme for the Endorsement of Forest Certification) Project Certification.

When Mace won a contract with Land Securities to construct the prestigious Park House development in central London, it chose to work with world-leading multi-sector certification body BM TRADA to achieve FSC Project Certification.

Park House

In early 2010 work began on the Park House development on Oxford Street, London. The nine-storey residential and retail project comprised commercial and retail units, as well as residential apartments offering luxurious spaces in the heart of Mayfair. With only six internal columns and a spectacular double height curved glass roof, this development is now one of the most sought-after commercial addresses in London.

The journey to certification

For FSC Project Certification to be awarded, close checks are maintained to ensure that sustainability claims about the project can be met.

This involves a project manager with responsibility and authority to implement and maintain the chain of custody being appointed to oversee the process.

Meticulous records are maintained to document the purchase, delivery, receipt, invoicing and volumes of all wood products received on site, and all personnel involved in the project with a defined responsibility within the system are fully trained in chain of custody procedures. Detailed records on this training are maintained.

For Mace, additional work was required during the auditing process to achieve certification, as Andrew Kinsey, Mace Sustainability Director, explains.

He said: “With the number of contractors and suppliers involved, and the different usages of timber on-site, there was a lot required to demonstrate full compliance for project certification.

“And for each contractor it was necessary to have a person responsible for ensuring the sustainable processes were followed and all the required information collated.”

To do this, Mace set up new systems for recording the relevant documentation, necessitating the creation of bespoke IT software as well as delivery notes. In addition, training manuals for the contractors and purchasers had to be prepared and training was given to ensure they were closely followed.

The £134m project was completed in January 2013 and BM TRADA awarded full FSC Project Certification to Mace Ltd (TT-PRO-004240) the following month.

Why BM TRADA?

According to Kinsey, the support from the BM TRADA auditor was “invaluable” during the certification process.

He said: “There are a number of certification bodies, but BM TRADA are timber specialists and the best at what they do.

“Auditors at BM TRADA are extremely thorough and knowledgeable, and try to be as helpful as they can, but always within the boundaries of the audit process.

“It’s always a pleasure to work with them.”

The Benefits of FSC Project Certification

According to Kinsey, there are demonstrable economic and environmental benefits to FSC® Project Certification and as such, it is something that Mace recommends wherever possible.

He said: “Most developers are now requesting greener credentials as they want to make claims about the environmentally-friendly nature of the

project, so project certification is great for construction and building companies.

“Certification allows us and our clients to make an environmental claim as it comes with a guarantee that the timber used does not contribute to deforestation.”

Project Certification – the facts

Project Certification is a process through which individual projects – whether new build development, major refurbishment or one-off features – can obtain chain of custody certification and make claims and statements about the use of certified timber during the build.

FSC Project Certification recognises and addresses the following key challenges:

- Multiple contractors are involved on-site and not all have their own chain of custody certification;
- The timber supplied is from certified suppliers but the uncertified subcontractors cannot make that claim;
- Each project will undoubtedly contain a quantity of uncertified timber;
- Some activities involving timber will take place outside the confines of the certified site. ■



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Concrete action on sustainable development

Concrete's role in delivering a sustainable built environment through industry initiatives and performance benefits is increasingly recognised and utilised by design teams, here The Concrete Centre explains more...

The UK concrete industry launched the Concrete Industry Sustainable Construction Strategy back in 2008, and has published its sixth annual performance report, presenting performance data across a holistic set of indicators including materials, carbon, waste and material efficiency, biodiversity and water, and wellbeing.

Carbon is the dominant metric for many in evaluating sustainability performance and the industry target is to reduce carbon dioxide emissions from the manufacture of concrete and constituent materials e.g. cement and meet the targets set in sector Climate Change Agreements. Through investment in innovation and efficient production technologies, the industry has reduced the embodied carbon of concrete, with a 23% reduction in CO₂ from 1990.

The sourcing and chain of custody of the goods and products we use in our built environment is of increasing importance. The concrete industry has taken a leadership position in this area and has adopted the BES 6001 framework for responsible sourcing. In 2012, 89% of concrete produced in the UK was accredited to this standard and 99% of this concrete achieved a 'Very Good' or 'Excellent' rating.

The industry has launched its 2020 commitments, which extends the breadth and depth of its aspirations including development of initiatives for low carbon freight and the measurement and management of water usage. One 2020 commitment is to develop a Material and Resource Efficiency Pro-

gramme to inform best practice across the life cycle of concrete in the built environment.

For example: In 2012, the concrete industry used 62 times more recovered and waste material than the waste it sent to landfill, making the industry a net consumer of waste. In 2020, our target is to reduce waste to landfill to less than 0.5kg per tonne of concrete produced. This represents a 90% reduction from the 2008 baseline.

Concrete Performance Benefits

The performance benefits of concrete: durability, robustness, fire resistance, thermal mass, acoustic performance and flood resilience, all contribute to the performance of our built environment. Concrete is a versatile and natural material and is increasingly being exposed in buildings for aesthetic and performance benefits.

Concrete's inherent thermal mass can save energy during the lifetime of a building, due to the reduced need for heating and cooling. For example, a typical masonry home has a slightly higher level of embodied CO₂ than an equivalent timber frame home. A study by the NHBC foundation¹ in 2012 found a maximum difference of 4%.

The study found that the operational emissions of concrete and masonry homes were lower over the 60 and 120 years periods used in the study. Similar results were also reached in an earlier 2007 study² undertaken by Arup, which also considered the



The Exchange by Burwell Deakins Architects

Image: Hufton + Crow

effect of climate change on dwelling performance.

This research found that the potential for lower operational emissions in masonry homes enabled them to offset their additional embodied CO₂ in as little as 12 years; a fraction of the dwelling's life.

In whole life performance terms, the benefit of thermal mass is likely to become increasingly important as the climate continues to warm.

Information on the industry initiative is available from www.sustainableconcrete.org.uk. A range of resources for designers are available at www.concretecentre.com ■

¹ Operational and embodied carbon in new build housing – a reappraisal (NF34), NHBC Foundation, April 2012.

² Embodied and Operational Carbon Dioxide Emissions from Housing: A Case Study on the Effects of Thermal Mass and Climate Change, J. Hacker (Arup) et al, Energy and Buildings 40 (2008), pp375-384.



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BIM Level 2: Mapping the road to success

The UK construction industry is making a good start in embracing BIM, providing the opportunity for reform and economic success as global leaders. Peter Hansford, Government Chief Construction Adviser details the value of BIM for the UK...

Technology is moving fast – including in construction. We are moving quickly towards a digital economy which is starting to have profound implications for our built environment. We must act now to ensure UK construction is, and remains, at the vanguard of smart construction and digital design, and have made a good start in embracing this through the BIM programme. Indeed, the UK BIM standards and processes are working as a world-wide acknowledged benchmark for industry digitisation.

For the public sector, BIM offers HM Government the opportunity to industrialise and reform its built environment through a digitally enabled procurement

process. Indeed, the level 2 BIM programme is already helping cement significant savings: early adopters such as the Ministry of Justice (MoJ) are reducing cost and improving quality through their BIM library concept, where they have standardised and digitised many of their assemblies. This process has also helped them drive down area requirements and determine solutions which will make it easier to ultimately economically dispose of their assets – such as courthouses – by formulating standard grid solutions compared to traditional non-standard layouts.

Our present goal is that all centrally-funded public procurement projects be delivered using Level 2 BIM by 2016, and the government's commitment to this



Peter Hansford
Government Chief
Construction Adviser
 Department for Business
 Innovation and Skills

target – set out in the Government Construction Strategy – remains firm. It provides a strong drive towards digitising our industry and, I am glad to report, one that is going well with significant progress and appetite from the departments to adopt BIM within standard procurement practices and operations. We are on track with our plan for getting BIM Level 2 production ready, which will position the departments perfectly for increasing the rollout of BIM across projects and making it business as usual.

With around 2.9 million people employed within our industry, the biggest challenge is not within the government departments, but raising awareness, building capacity and capability within the supply chain. Our whole sector approach to BIM is making organisations challenge preconceived ideas, and encourages techniques and incentives to standardise ways of working in which 3D geometry and data is stored throughout the lifecycle of buildings and infrastructure.

Key to this is the creation of Level 2 BIM maturity by the BIM Task Group who, along with BSI, have developed a number of standards, documents and guides to explain clearly how BIM should be applied. This is the big challenge for the supply chain: better controls and definitions of both data deliveries and data classification. The Level 2 BIM programme is a key enabling strategy for the UK developing both these processes, and open data definitions. Creating a capable, informed work force will cement the UK as

the recognised leader in vision, policy, capability and results for Digital Construction World Wide.

Creating and managing digital data sets for transactions and queries is undoubtedly a step change for industry. Within the supply chain we are seeing early adopters offering levels of efficiency, reduced costs, faster delivery and ultimately, delivering buildings and infrastructure that are ‘right first time’, and offerings consistent with sectors that have made a switch to digital working and process automation. Communities such as the BIM4 working groups are helping articulate the business case for BIM, and help demystify what needs to be done within their relevant populations to make level 2 BIM happen. The fact that they can build in beta digitally and debug before executing flawlessly on site makes it all worthwhile.

The Industrial Strategy for Construction – Construction 2025 – set out a vision of “an industry that is efficient and technologically advanced”. It is therefore essential that we are prepared for a sector switch from analogue to digital given the size of the prize. Economists have estimated that the UK market for BIM-related services will be an annual £30bn by 2020. In a global context, UK-based firms already export £7bn of architectural and engineering services. Pursuing a global leadership position in developing BIM capabilities will provide strong potential for further export growth, and enable our industry to deliver higher quality and a more sustainably built environment for future generations. ■

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 Department for Business Innovation and Skills
 Tel: 020 7215 5000

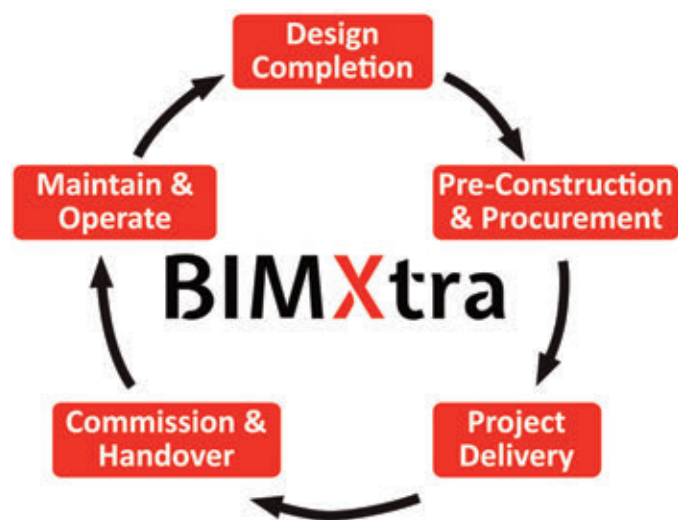
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Bringing the simplicity and opportunity of BIM to all

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.

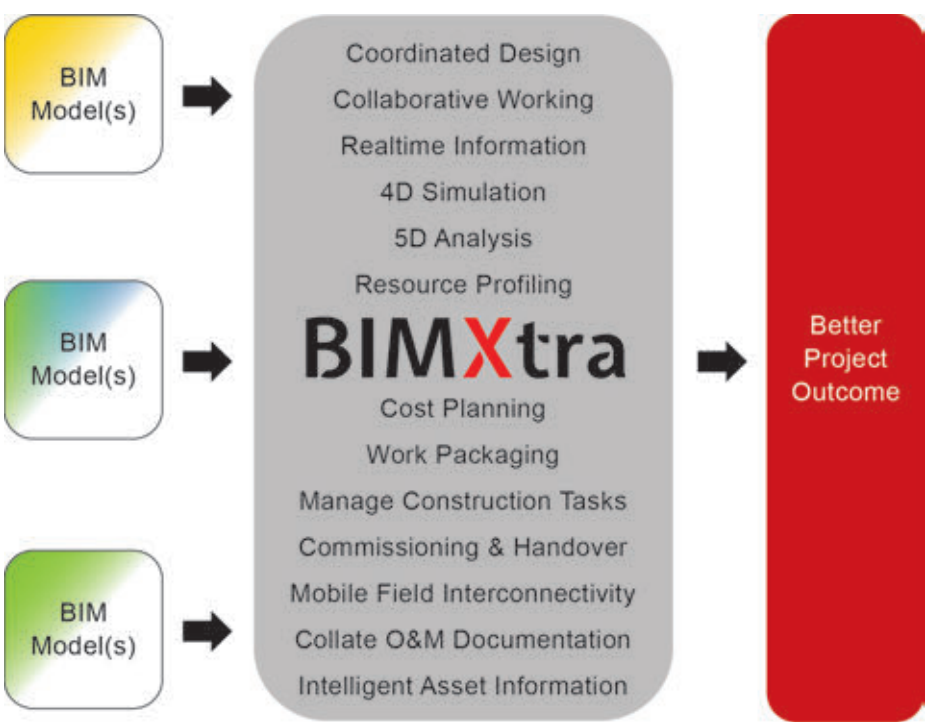
Not surprisingly achieving the utopia from this transformation, like all transformations has it's challenges, however, much has been done to address the needs of industry through new technology, and the guidance for the new BIM enabled project delivery process is established in the British Standard and 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

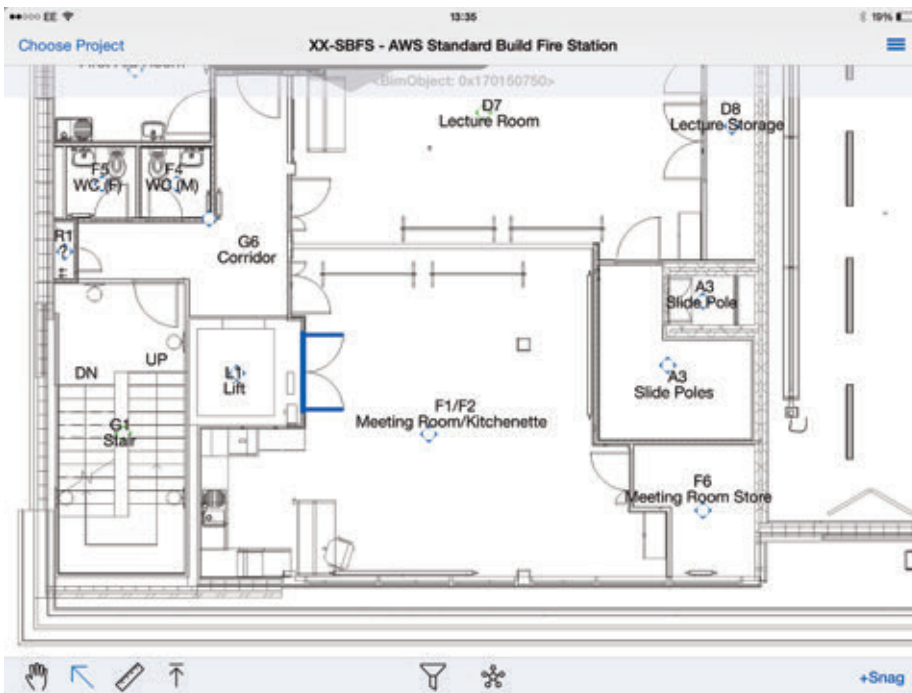
requirements of Level 2 BIM and beyond as a hosted solution. As 2016 approaches and the gap between the haves and have not's of the BIM world grows there is no better time to jump on board and benefit from the lessons learnt from some of the early adopters.

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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Having built a huge database of over 50,000 email contacts for the construction industry, the Directory is growing at a rapid rate with subscribers joining every day.

www.adjacentgovernment.co.uk



BIM and the SMEs: Opportunity is knocking

SMEs are key to the UK's BIM journey, so their uptake is vital to ensure our BIM leadership. David Philp, Head of BIM at Mace and the UK BIM Task Group explains their importance...

In 2013, there were 4.9 million businesses in the UK, with over 99% categorized as small or medium sized businesses (SMEs) i.e. employing between 0-249 people. Of this populace the SME community's share of construction turnover in the UK private sector was 72.4%.

Given that SMEs are the backbone of our sector, we must ensure that they have sufficient digital capacity and capability to ensure that the UK remains at the forefront of BIM leadership across the globe. But why should they care? Why should they consider investing in change?

The reality is they have to compete on a new basis with fierce international competition for the provision of skills and products and ever tight project afford-

ability constraints. It is self-evident, therefore, that to flourish with the backdrop of these challenges that they must reform and unlock more efficient ways of working.

BIM really offers SMEs the opportunity to raise their game and contend in the heavy weight classes. Despite often being resource constrained, the SMEs are a motor of innovation with inherent change characteristics often not found in bigger organisations, coupled with faster decision making processes. It is essential, however, that SMEs build adequate knowledge capital in the BIM space to improve their value creation processes to:

- Sell or export this knowledge to another organisation as part of their offering; and,



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

- Improve their offering, such as manufacturers who can liberate the data associated with their products to increase exports, create new markets or simply get specified earlier in the construction process.

There is much evidence to support the hypothesis that digital enabled workflows benefit the SME in the built environment. Organisations such as David Miller Architects (DMA) have seen both direct and indirect benefits through their BIM implementation; growing from a small to medium size practice through the efficiencies they are achieving, but also how they are being perceived differently by clients and through meritocracy competing for larger and more prestigious commissions.

Additionally, the tier 2 and 3 communities play an important part in enabling the larger tier 1 organisations. It is therefore essential there is a symbiosis between these parties to help each other up-skill and exchange digital data.

So where should an SME start their journey? Firstly start with the free stuff.

1. Perhaps I am a tad biased on this but visit the BIM Task Group website www.bimtaskgroup.org. This is a treasure trove of great resources on the BIM standards and processes. Be sure and visit the labs space and read the fortnightly newsletters.

2. Read PAS1192-2:2013 and PAS1192-3:2014 which looks at information management for the capital and operational phases of construction projects using BIM. These can be downloaded free of charge from the BSI website. They can be also be accessed via the BIM task group website.

3. Build a network – trust me, BIM is about open innovation and collaboration. Join the dots with your local Regional BIM Hub <http://www.bimtaskgroup.org/cic-bim-regional-hubs/> and the BIM4SME working group <http://www.bim4sme.org/> who are doing great work to raise the awareness and value proposition of BIM for smaller organisations.

4. Capability. You are probably already doing some BIM efforts but perhaps you don't even realise it. Have a review of how you create or manage your digital data. Do you use a common data environment? Work out where you are on your point of departure and determine what up-skilling is necessary to close the gaps. Consider both: knowledge of processes as well as skills on digital toolsets.

5. Have a play about. Most technology vendors offer free viewing, or indeed in some cases, free clash detection tools. Often viewing and reviewing models will be all you need and you can do it for free.

Do your duty. Ensuring the UK construction sector builds on its rich heritage and makes a big step into the digital frontier will be massively driven by the uptake of the SME community, so remember you can't hit a home run unless you step up to the plate.

Our digital universe is growing exponentially as are the opportunities. Big data, and the increasing value of the internet of things will all create new exciting prospects for the SME players in our fast changing built environment.

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BIM – From Design to Demolition

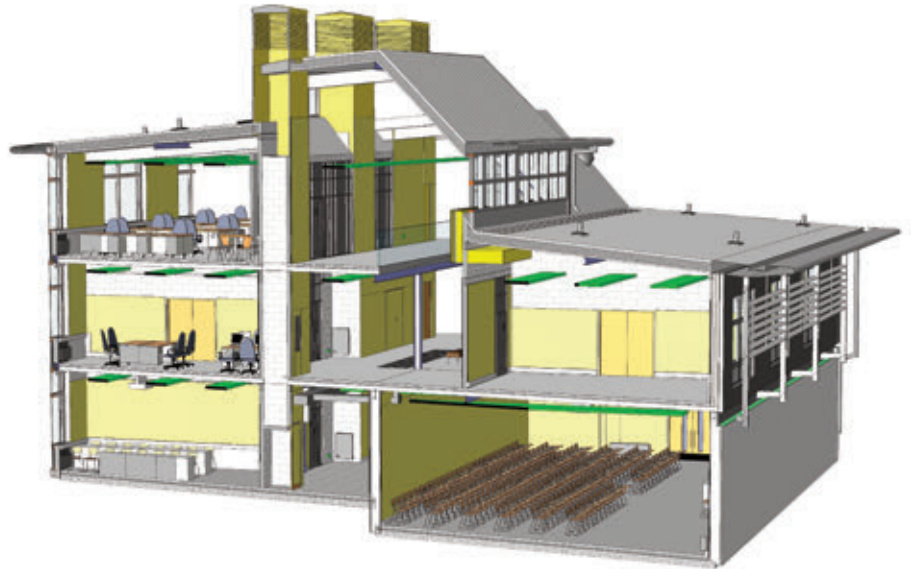
UWE Bristol launches new MSc in BIM to help meet stricter public construction protocol

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.



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Empowering the world's BIM community

The take up of BIM is growing, and with the help of a specialised online networking service dedicated to the construction industry, engagement should increase. Andera Al Saudi, Business Director for The BIM Hub sheds light on their vision...

The global construction industry is enormous, with over US \$7.2tn worth of construction projects completed every year, and is expected to grow by 67% to \$12tn in 2020. The construction industry is complex, fragmented and rife with problems such as delays, rework, standing time, material waste, poor communication, conflict and being over budget, compounded by the global slowdown and the need to address sustainability issues.

The challenge we all face is to encourage continued investment in tackling these issues in a market made 'nervous' by a reduction in the value of property and subsequent threat to profits. A way to restore investor confidence is through reducing investment risk by producing more at a lower cost, which can be achieved by eliminating waste and improving overall productivity across the construction process.

The BIM process

The Building Information Modelling (BIM) process and technologies have been developed specifically with these problems in mind and have been very successful in resolving them. BIM is a business process supported by technology, which itself is optimised by deploying the process. While traditional methods use technology in isolation, the BIM process uses technology in collaboration.

With the take up of BIM growing daily, the construction industry is going through change which many construction professionals believe will revolutionise the industry. Whilst adoption is increasing the actual level of BIM, the use is mostly limited to quantity take off and coordination of multi-discipline activities at the office. However, the use of the different 'BIM

uses' is slowly but surely growing including project management and construction sequencing. The full impact of BIM in the construction industry sector is yet to be realised.

To help the construction industry have a better understanding of BIM, a number of initiatives have been set up such as BIM associations, BIM forums, BIM task groups, BIM committees, BIM events, BIM conferences etc. all aimed at construction professionals to help them with information sharing and education. The greatest challenge in the construction industry is to connect the BIM stakeholders in a single specialised networking service, enabling the BIM community to work together.

Thousands of companies have started to promote their businesses in line with the BIM adoption in a quest to be more competitive, and are aiming to get a bigger stake of the AEC market. These companies have initiated changes within their organisations by setting up BIM departments and teams, or outsourcing to BIM service providers/consultants to help with the change process. This has led to an exponential increase in BIM related articles including presentations, papers, case studies, reviews, research material etc. which can be found through a quick search for 'BIM' on the internet. Whilst this enormous amount of BIM information is valuable, it is quite unstructured and takes a considerable amount of time to filter down to what the reader is looking for, and quite often the reader ends up spending hours upon hours searching the internet with little or no benefit in return.

Many of us actively use sites like Facebook and Twitter to promote our businesses. When looking to connect

with more business-related contacts we usually turn to sites like LinkedIn to develop relationships with people we have worked with or may want to work with. LinkedIn groups support a limited form of discussion area, moderated by the group owners and managers. The active use of these social sites has helped the growing use of social networking by business professionals. However, these sites are not really suited for meeting the growing need in supporting BIM professionals.

The BIM Hub is a pioneer in providing specialised online networking services dedicated to the construction industry. It provides the first social platform that brings all the construction industry into a single hub. The BIM Hub's goal is to empower the BIM community to better **connect, learn, develop** and communicate real world data and help people better understand and engage with the places we live, work and play, and together build a more connected, liveable and sustainable world. Features include the world's first BIM Company Directory, networking with construction and BIM professionals and an expertly-curated set of resources for all industry professionals. In the coming months The BIM Hub will include BIM related projects, tenders, careers and events.

Connect: Until now, connecting with others about BIM has been a formidable challenge. But when the strength and might of the construction sector is harnessed, streamlined and brought together through BIM, the industry as a whole will become stronger, more efficient and more effective. This will lead to improved efficiencies and profitability for those that adopt and adapt.

The BIM Hub enables everyone in the construction industry to network and connect whether they are government officials, project managers, consultants, architects, engineers, contractors, manufacturers, management operators or educational bodies.

Learn: Learning about BIM requires a great deal of time and effort. Construction companies and organisations are working in silos, left to their own devices.

Before The BIM Hub there were no online websites that covered the full spectrum of BIM information required to implement BIM. The BIM Hub is about usefulness and relevance of information today and tomorrow, in a trusted environment. The BIM Hub works to provide professionals with the best-curated content on BIM.

Develop: 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 and help shape the future of the construction industry. ■

theBIMhub™

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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

Tahir Sharif
EMEA Director Software Solutions
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BIM Field Trip

by Leica Geosystems

For further information about BIM please contact
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or call on 01908 513400



BIM Level 2: Legal considerations

Understanding the contractual framework for the implementation of BIM is an important first step to removing any 'blockers' to successful BIM construction projects. Andrew Marsh, Partner at DAC Beachcroft LLP provides an overview of the legal considerations...

In 2013 the government launched its Construction 2025 Industry Strategy to provide a vision for "long-term strategic action by government and industry to continue to work together to promote the success of the UK construction sector". Building Information Modelling (BIM) was high on the agenda. It identifies BIM as critical to allow the sector to deliver more sustainable buildings more quickly and more efficiently.

The Government is keen to put the UK at the forefront of BIM and by 2016, all centrally procured government construction projects must be delivered using BIM. This will apply throughout the supply chain across all values of project. However, in the NBS' recent survey, 95% of respondents were aware of BIM but only 54% were actually using it. There could be a number of reasons for this relatively mixed take up; lack of knowledge, lack of opportunity, lack of technical skill or lack of resource. An understanding of the contractual framework for the implementation of BIM is an important first step to removing any 'blockers' to the successful implementation of BIM construction projects.

What is BIM?

"At its simplest level, BIM provides a common environment for all information defining building, facility or asset together with its common parts and activities. This includes building shape, design and construction time, costs, physical performance, logistics and more" (RICS "What is BIM").

BIM is used at a number of different levels of maturity from Level 0 being a paper based process with CAD drawings, to Level 3 which is a fully integrated and

collaborative process on a web-enabled hub. For 2016, the government target is Level 2 BIM in which separate disciplines create their own models but all project data is shared electronically in a common environment. The Construction 2025 Strategy expects to see the UK Government and industry to move to Level 3 BIM between 2013 and 2025.

The contractual framework for BIM

The contractual framework for Level 2 BIM has been established. Level 3 BIM presents a different set of contractual challenges which are not addressed in this article.

The government's BIM Strategy followed the recommendations of the BIM Industry Working Group which recognised that contractual issues had the potential to act as a source of inertia holding back the adoption of BIM on projects. The Working Party report dated March 2011 recommended little change to the 'fundamental building blocks' of existing contracts to facilitate working at Level 2 BIM.

The Working Party recommended the use of simple amendments to existing standard form contracts, to incorporate standard BIM Protocols and Service Schedules to define BIM specific roles; ways of working and desired outputs.

The Construction Industry Council's (CIC) response to the Government's BIM Strategy was to issue a CIC/BIM Protocol for use on all common construction contracts to support Level 2 BIM. There are other Protocols available, but this article concentrates on the CIC/BIM Protocol so as to illustrate the relevant

issues. Further, the JCT does anticipate the use of the CIC/BIM Protocol (“the Protocol”).

The Protocol makes minimum changes to pre-existing contractual arrangements and sets out the parties obligations to provide defined elements of their works/services using models. Once incorporated the Protocol is a contractual document and takes precedence over the other contract documents.

The CIC also sponsored the production of PAS1192-2:2013, by the British Standards Institution, which is a specification for the information management requirements necessary for working at BIM Level 2.

The Protocol should be read in conjunction with PAS1192-2:2013.

The Protocol

All parties engaged in a project using BIM are required to have the same Protocol appended to their contracts. This will ensure common standards and methods of working. It is the responsibility of the Employer in each contract in the supply chain to ensure that a Protocol is appended to the contract.

The Protocol includes a ‘model’ amendment to expressly incorporate the Protocol into standard forms of contract.

Model Production and Delivery Table (MPDT)

The MPDT is a key contractual document annexed to the Protocol. It defines which models are covered by the Protocol, allocates responsibility for the preparation of the models and identifies the Level of Detail (LOD) required at project stages or ‘data drops’.

Definitions of LOD’s can be found in PAS 1192-2. The project stages or ‘data drops’ should match the stages used on building and infrastructure projects, or professional appointments, such as RIBA Plan of Work.

The Information Requirements (IR)

The IR is the second key contractual document annexed to the Protocol. The IR contains the information necessary for the production and development of the

models in a consistent and uniform way across the project. For example, it will prescribe the Common Data Environment, the software details, file formats, file layers, the language, abbreviations and symbols, zoning requirements and information protocols such as spatial co-ordination and information exchange.

It is the responsibility of the ‘Information Manager’ to agree and issue the IR, which should be incorporated into all contracts on the Project.

The Protocol assumes that the IR (and the MPDT) will be completed and developed by someone with a strong technical knowledge of BIM.

The Information Manager

The Protocol requires the Employer to appoint an Information Manager. It is expected that this role will form part of a wider set of duties, and is likely to be performed by the Design Lead. However, it could be a stand-alone appointment if the employer chooses to.

The scope of services for the Information Manager needs to be properly defined in its Appointment.

The CIC have published a Scope of Services document for the role of Information Manager which includes:

- Establishing the Common Data Environment;
- Establishing processes and procedures to receive information into the Information Model;
- Maintaining the security and integrity of the Information Model;
- Agree and implement plans for the provision of information, the level of detail and the relevant stage.

The Information Manager has no design related duties and is in effect, the ‘policeman’ for the Information Model.

Intellectual Property Rights

As a consequence of the increased collaboration

necessary when working on a project using BIM, the issue of intellectual property rights is obviously a concern and it is specifically addressed in the Protocol.

The provisions in the Protocol regarding IP rights are reasonably complex, but the basic principles of the arrangements are as follows:

The ownership of rights in the models produced by a Project Team member remain vested in that Team Member.

However, the Employer is granted a non-exclusive licence to use the material in the models for the ‘Permitted Purpose’ which is defined as; “a purpose related to the Project (or the construction, operation and maintenance of the Project) which is consistent with the applicable Level of Detail of the relevant Model and the purpose for which the relevant Model was prepared”.

The licence also permits the Employer to grant sub-licences on identical terms to other Project Team Members. The licence does not include the right to change any information in the Model without the Project Team Member’s consent, except in limited circumstances. So, in short, the Intellectual Property rights in the Information Modelling remain with the originator, but the Employer and the other Project Team Members have the benefit of licences to use that information for ‘the Permitted Purpose’.

Clearly the definition of “Permitted Purpose” is an important one, hence the importance of addressing properly the terms it refers to in the MPDT and IR.

Performance Obligations

The Protocol requires the Employer to ensure a Protocol is incorporated into all Project Agreements, that the IR and MPDT are reviewed and updated at relevant stages, and that an Information Manager is appointed at all times.

The Project Team Members are required to produce the specified Models to the required Level of Detail specified in the MPDT, using the level of skill and care

required under the original contract, at the stage(s) specified in, and in accordance with the IR.

In terms of liability for the Information Modelling, the Protocol states that a Project Team Member shall have no liability for the use of, copying of, amendment of or modification of such information other than as permitted by the licence to use for the ‘Permitted Purpose’.

Similarly the Employer’s liability for any Information Modelling provided to the Project Team Members is limited to that in respect of the licence it granted for use for the ‘Permitted Purpose’.

Conclusions

The contractual framework for operating at BIM Level 2 is available via the Protocol, supplemented by PAS1192-2 and existing standard form contracts.

These are standard form documents. Amendments to these documents could create increased liability and contractual uncertainty.

The effectiveness of these contract documents is assisted by careful comprehensive and informed preparation of the technical data which supports them – the MPDT and the IR.

The above is a summary of the contractual considerations. This is of course a ‘new’ area for participants in the industry and it is recommend that legal advice is obtained before entering into any contractual arrangements. ■

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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.

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Help with implementation

Tekla staff and our resellers help with implementation of the software. We work closely with our customers and offer local support, training and consultation.

Open approach to Building Information Modelling

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



Duncan Reed

Digital Construction Process Manager

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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Designers – don't be scared of BIM

Alex Wall, Managing Director of WCEC Group Ltd discusses the benefits of BIM for SME's and provides advice for new adopters...

Within the world of BIM there is a lot of jargon and a lot of discussion about revolutionising the process of design and construction.

This in itself leads to anxiety and becomes a barrier to BIM adoption for many SMEs. With the government target of "Level 2 BIM" now less than 18 months away this is further increasing levels of anxiety, confusion and uncertainty.

My message is simple. **Don't panic.** Focus on your business needs and how you can benefit from this technology. BIM technologies offer a much more efficient and effective tool to design with. You should adopt BIM technologies to increase your efficiency and give you competitive advantage.

I have repeatedly seen that the effective adoption of BIM software can increase design productivity by between 20 and 40%. I have seen this across multiple sectors and disciplines, at all stages of design and for all sizes of projects. Design information can be produced more quickly and more accurately with associated schedules both linked and automated.

Improved collaboration, coordination, project planning, procurement and cost control can be viewed as secondary benefits together with potential project tender requirements. Focus on your primary goal of design efficiency. The other benefits will follow.

I suggest a 5 point plan for easy cost effective pain free BIM adoption:

- **Start small** – get one or two workstations set up and train a small number of staff;
- **On the job training** – select and deliver a trial project using BIM;

- **Allow time** – your first project will take longer and be less efficient. You get more efficient on every project;
- **Be structured** – naming and data entry are important. Adopt industry standards such as the AEC (UK) BIM standards;
- **Get help** – employ a consultant to help you learn how to use the software efficiently and understand the standards.

Don't spend a lot on software and train people who are not ready to use BIM. To be effective, people need to work on real projects and be dedicated to getting the most out of the software. I would also suggest you don't pay for expensive protocol documents to be written (they are probably only cut and pasted from the industry standards anyway).

The first project will be hard but don't be put off. Levels of efficiency will continue to increase. Efficiency is derived from having good libraries of design components and comprehensive drawing and schedule templates. These will develop over time.

The potential of this technology is exciting so focus on how it can benefit your business. ■

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Alex Wall

Managing Director

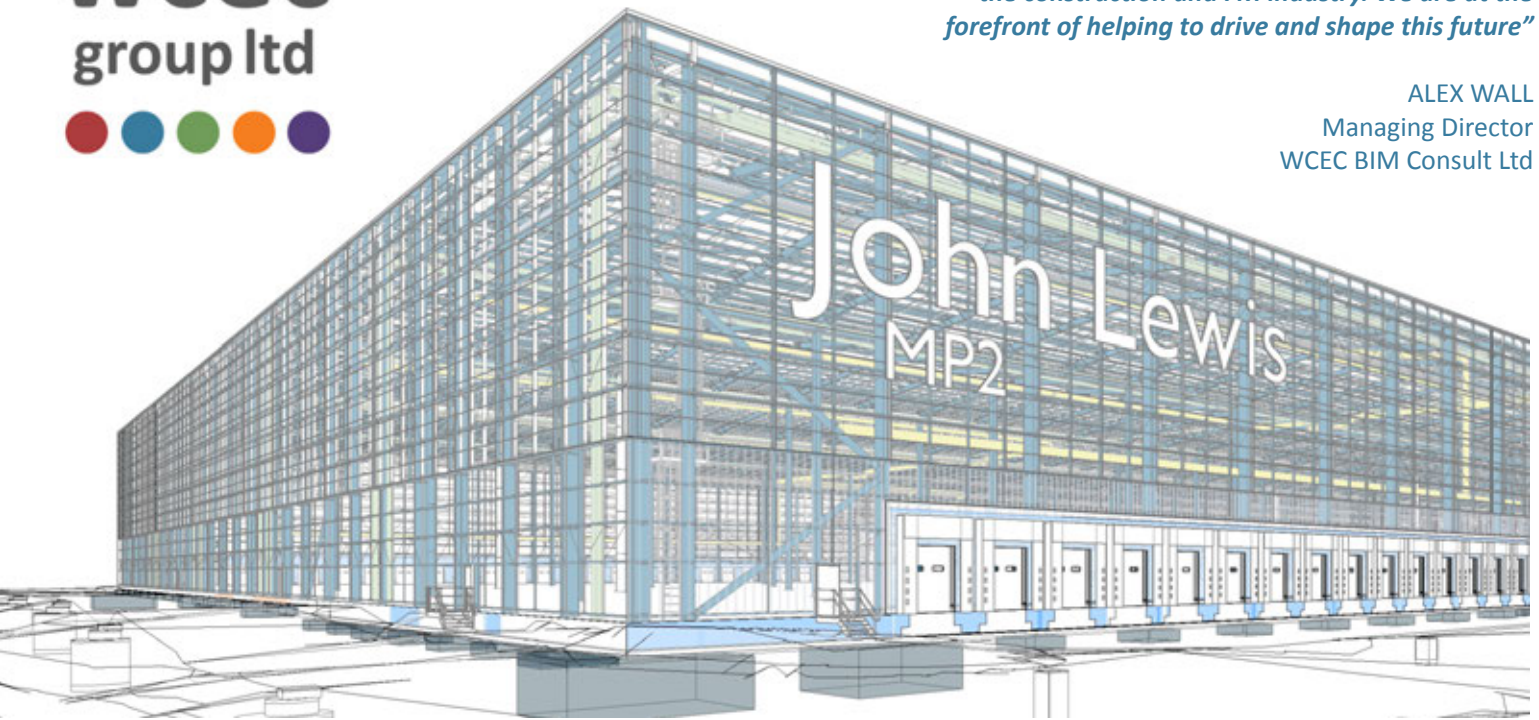
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"If implemented correctly BIM is an efficient process which saves time and money at all stages of the construction process. It should be central to how we manage designs, costs and construction works timely, efficiently and accurately."

DAVID BIRD BIM Manager, WCEC BIM Consult Ltd



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Stepping up to level 2 BIM

Being level 2 BIM compliant will soon be a government project requirement. Mark Eggleton, Managing Director at EaglestoneUK Limited explains that it needn't be a giant leap to meet the new standards...

With the 2016 government deadline looming, companies of all shapes and sizes are starting to feel the pressure to evolve their current working practises to deliver level 2 BIM. The prospect of having to be level 2 compliant could be perceived to be daunting for companies both small and large. New processes, new technologies, and a whole new cultural way of working to absorb and make sense of the requirement has left many organisations frantically hurrying to get things in place.

If you are reading this and are thinking "this is me" don't worry, you are not alone.

I have encountered many companies and organisations who are all heading off down their own individual rabbit holes trying to solve this apparent mystery. All too often recently I have come across companies who have invested heavily in technology, with no real clue as to what they are purchasing and how it fits into their business model. At the same time I have encountered clients who have quite simply instructed "BIM" to be included in the contract, with no real idea of what they want, need, or are asking for.

As an industry we have been managing our building and asset information through design, construction, operation, maintenance and disposal for some time. BIM is nothing more than the next evolutionary step to unlocking more efficient and effective ways of working. There are new processes, there are new technologies and there is a new cultural shift required, but the step to level 2 needn't be a giant leap.

The key to unlocking the success of BIM is ensuring value can be recognised by all parties, for BIM to be successfully adopted, everyone has to benefit.

It is a reality that investing in BIM (knowledge, skills, technology, training and resource) is an expensive exercise for any company; size is not an issue, the cost per head is scalable and relative from small practises to multi-national corporations.

With the current economic pressures and financial constraints, clients who commission projects are quite simply looking for more for less. It is clear that clients have the most to gain from BIM; there are many case studies available now which demonstrate BIM as an enabler to faster, better, cheaper and safer construction projects. But with the supply chain having to invest upfront in BIM and the opportunity to pass the costs onto the client not a viable option, the value and benefit of adopting BIM for the supply chain has to be identified.

The value proposition to the supply chain is of course through repeat business, if you can accept as a business that you are not going to realise a return on investment for some time, but can also acknowledge that adding value through demonstrating effective and efficient ways of meeting your client's requirements will lead to more work, then you are already heading in the right direction. ■

.....
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Managing Director

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Raising the value of building control

The building control profession understands its vital role in the construction industry and the need for ever higher service delivery. Paul Wilkins, Chairman of the ACAI, BCA and CE of Butler & Young outlines how this will be delivered...

The profile of building control as a service valued by government, industry and wider society continues to be raised. In my joint roles as Chairman of the Association of Consultant Approved Inspectors and the Building Control Alliance, both organisations will be developing and supporting initiatives to raise standards in service delivery and encourage best practice and cooperation across the public and private sectors.

One of the initiatives we support is the implementation of the recommendations of the independent review of the Approved Inspectors Registration Scheme in 2012. This should result in a robust registration and re-registration process supporting approved inspectors in delivering a highly valued service. Tony Burton, the

Chair of Construction Industry Council said that: "The Approved Inspectors Register is just such an example of where professional bodies have worked together in a successful collaboration. It is exactly what we need to continue to do with big and seemingly impossible issues."

In addition, we are currently awaiting the publication of a new set of building control performance standards which will outline the minimum service delivery standards that the construction industry should expect from its building control body. They will be developed into a new set of key performance indicators that individual building control bodies, both private and public, will submit to the Building Control Performance Standards Advisory Group for publication. This will

Continued on page 78...

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continue to enable comparisons of different building control bodies and again help to raise standards and transparency.

Current issues

One of the major initiatives that has come from government is the Housing Standards Review (originally launched in October 2012 with the consultation closing in October 2013). The summary of responses was published in March this year along with a written ministerial statement supported by a policy note. It was very positive from the building control perspective in that there is a building regulations only approach to many of the requirements that were announced. The review detailed the number of different regulations and standards that were in existence where housing was being developed, and the government felt it could be a barrier to housing development, which is obviously a major issue. The outcome is that a number of themes are being taken forward including:

- Access. Part M will continue to be used to set standards with optional standards within Part M that local planning authorities can adopt if they meet certain criteria;
- Security is also being taken forward with a consideration for a national standard for new homes given the impact they can have on reducing crime, particularly burglary;
- Water efficiency – There are title requirements for water efficiency usage that can now be built in.
- Energy efficiency. Part L will be the only energy requirement removing other considerations such as the Code for Sustainable Homes;
- Space. There could be a new national standard for space for room sizes.

Building control as a profession is very supportive of the initiatives, and we are contributing positively to the implementation process, but are still awaiting the outcome of the actual implementation.

Another government theme surrounds the Zero Carbon Initiative with the most discussed issue being

Allowable Solutions, including both on-site and off-site solutions which can contribute to carbon usage. It is possible to use off-site solutions such as a wind farm to offset some of your carbon. Again, building control is very supportive of this government initiative. There may be some challenges for building control in the delivery of this, but we are working very hard with government to ensure that their desired outcomes will be met and support any initiative that helps us to achieve carbon reduction targets.

The last issue is very important for our industry, and that is the future of resourcing. The building control profession continues to become more challenging in terms of the skill-sets required to deliver ever higher standards. It's a challenge to encourage young people into the construction industry as a whole, but especially into a niche industry such as building control and building regulations.

The Building Control Alliance (BCA), the Association of Consult Approved Inspectors (ACAI) and Local Authority Building Control (LABC) are working very hard to develop graduate and modern apprenticeship schemes specifically for building control. It is our aim to find ways to engage with young people to promote our profession and to highlight how important it is to the construction industry.

Overall the value of an independent third party building control system continues to be positive and sets an example of best practice in the design and construction phases of the development control process, a model that is being adopted across the world. ■

.....
Paul Wilkins
Chief Executive at Butler & Young Group
Chairman at Association of Consultant Approved Inspectors (ACAI)
Chair of the Building Control Alliance (BCA)
chairman@approvedinspectors.org.uk
approvedinspectors.org.uk



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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'.



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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 24/7 access 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.

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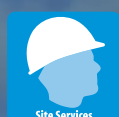
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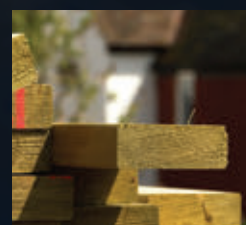
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Electrical Safety – the next chapter

Electrical Safety First led the fight to keep Part P of the Building Regulations for England. Here, Phil Buckle, Director General of Electrical Safety First, explains how Part P has changed and what's coming next...

Part P of the Building Regulations for England was launched in 2005 to reduce the number of domestic accidents, deaths and fires arising from poorly installed electrical installations. Five years later, the government announced that it would be reviewed, with the aim of reducing the regulatory burden and improving compliance. A public consultation followed in December 2011 and a final report was published a year later, with most of the government's amendments to the regulation coming into force in 2013.

One of the key changes to Part P was the reduction in notifiable work, i.e. work which must be reported to local authority building control. Now, electrical work undertaken in kitchens or outdoors is no longer covered by Part P - unless a new circuit is required. While Electrical Safety First welcomed the attempt to make Part P less bureaucratic and more effective, we believe reducing notifiable work could put people in real danger. Both statistical data and anecdotal evidence indicate that kitchens and outdoors are high risk areas which require a particularly rigorous standard of electrical work.

The government's other major amendment involves third party certification, which came into force last April. This allows contractors who are not registered with a competent person scheme to use a registered third party to certify notifiable work, rather than using their local authority's building control department. Two of the competent person schemes have signed up to use this approach, while two other major scheme operators have chosen to opt out.

In addition to the government's review, the Communities and Local Government (CLG) Select Committee has also undertaken a number of sessions to scrutinise

Part P. Responding to concerns – raised both by government and the Select Committee – regarding the low level of public awareness of the regulation, the industry has come together to produce a single register and 'mark' of Part P approved contractors. The register – which can be found here¹ will go live on 2nd July. To support these new developments, Electrical Safety First will be spearheading a consumer campaign to raise awareness of the need to use a registered electrician.

Our research has shown that the number of people using unregistered electricians has more than trebled in the last two years. We also asked 2,000 electricians about their work and found that a third of them are spending up to a quarter of their time fixing botched DIY jobs, with most call-outs involving fixing simple jobs that have gone badly wrong.

As a consumer charity, our core concern is the safety of the general public, but we believe we can best serve that by working closely with the industry. And the battle to save Part P, and now raise its profile, shows that this approach really can work. ■

¹ www.electricalcompetentperson.co.uk

The statutory requirements for electrical installations differ throughout the UK. In Wales, Part P (without the recent amendments) operates, while Scotland requires electrical work to comply with its own Building Standards. Northern Ireland has no equivalent statutory requirement.

.....
Phil Buckle

Director General

Electrical Safety First

www.electricalsafetyfirst.org.uk

[www.twitter.com/ElecSafetyFirst](https://twitter.com/ElecSafetyFirst)

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Paul

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By engaging with local access groups, developers can benefit from the inclusive design process

GLA Greater London Authority



Inclusive design: Time for access for all

Inclusive design principles are a consideration that is sometimes lacking in new build projects across the UK. Alexandra Smedley, Manager at NRAC calls for the adoption of a new inclusive design overlay to improve access for all...

The RIBA Plan of Works has been in place since 1963 and has served as a valuable management tool for architects, construction professionals and Clients. There have been various revisions and amendments along the way to ensure that it has integrated the changes and developments in the design and build process as they impact upon the respective professions.

However, with the inevitable divergence into areas of specialism through the various sub components such as inclusive design, acoustics, safety and fire risk assessment, sustainability and more recently BIM (Building Information Modelling), there has been a need for improved clarity for all involved in a project team to understand the demands and requirements for these specialist services.

In 2011 the RIBA produced a [Green overlay](#) to the plan of works which outlines the key deliverables at each stage in relation to sustainability targets and criteria. This served as a beneficial tool for those involved in project management, architects and construction professionals. It was developed by an expert panel of sustainability engineers to give practical and effective guidance.

The format was an overlay of checkpoints at each design stage A to L, and was supported by supplementary text expanding upon the items within the checkpoints lists. It also served as a signpost to further reading, research and information resources.

With the rapid progression and inclusion of BIM within the design and construction industry it

became apparent that another overlay was necessary to serve the same function as the Green overlay. A management tool was needed to define the new activities and protocols that had arisen with the implementation of BIM throughout the equivalent plan of work stages. The UK government's 2016 BIM mandate which applies to all central government departments but not to local authorities, demands that Level 2 BIM is applied to all projects after this time.

The format for the [BIM overlay](#) was slightly different to the Green overlay. It still provided information of key activities and deliverables at the equivalent plan of work stages, as it felt that architects had a leading role to play in the widespread adoption and smooth transition of the principles applied with BIM to a project. However it also set out to allay the concerns of architects and others around the business case for making the change of process which would require a shift in knowledge, staff training and equipment.

As part of the research into both overlays, the RIBA plan of works was also looked at for its efficiency to serve as a valuable tool that related to all involved in the design and construction process. Was it still robust enough to suit the needs of large and small practices and take into account the diverging procurement routes and additional sustainability and BIM criteria.

May 2013 saw the release of the new [RIBA plan of works](#). This marked the first fundamental shift in the plan as the stages were condensed into eight from eleven, and renamed with numerical references 0 to 7. To date the take up of the new plan of work has not been compelling, however, regardless of this, it is felt by the National Register of Access Consultants (NRAC) that there is still the need for an overlay that applies to inclusive design principles and deliverables that are required of all new build projects across the UK.

What is the overlay?

The Inclusive Design overlay follows the same format that has been applied before. Using the RIBA plan of works matrix for stages 0 to 7 the NRAC have listed

the key deliverable tasks for each stage and the associated activities that should be taking place.

The draft diagram format has been included into the [London Plan Accessible London SPG](#) Appendix 3 which was out for public consultation until 11 July 2014. It is hoped this will give wider recognition to the overlay and also acknowledge a greater response to assist in the revision and finalising of the document. We are still seeking comments on the table diagram so please send through your thoughts to info@nrac.org.uk with the message title 'Inclusive Design overlay'.

As with the Green overlay, there will be a supplementary text element to explain the key tasks and activities listed where appropriate.

For example, Stage 0 Strategic definition lists the following as the core inclusive design activities; identify inclusive design issues from user feedback to be included in the brief and support Business Case. The supplementary text to support this stage will contain an introductory text to give legislative context around the different duties within the Equality Act 2010, but only those that will have a direct impact upon the design and use of the service and facility. There will also be a risk matrix which will assist in the decision making process relating to inclusive design involvement and features within a project from conception through to completion and post occupancy stages.

Stage 1 Preparation and Brief lists the second activity after confirming scope of services as consultation with the relevant user group.

It goes on to highlight the importance of identifying a relevant target group for the specific scheme and service being delivered through the building. Consultation is often something of a tick box exercise but it shouldn't be. It is a valuable tool for identifying potential stumbling blocks to the design and use of the site by those it is intended for. Valuable contributions can be made when you are able to identify a target group who can comment on the design concept as it develops. Break the mould of

Who we are

The National Register of Access Consultants (NRAC) is the accreditation body in the UK for access professionals. All members have to go through a rigorous assessment process devised by practising access consultants and reviewed by their peers. NRAC Auditor and Consultant members have attained a level of competency in their technical knowledge surrounding inclusive design principles and current mandatory and best practice design standards, the application and understanding of the relevant duties under the Equality Act 2010 and have their professional manner and conduct in delivering information to clients as various recognised outputs including, access audits, design appraisals, design and access statements and inclusive design policies.

The NRAC were set up with support from government in 1999 in a bid to rationalise and quality control the amount of people that were offering access consultancy and inclusive design services.

Our members are made up of a range of professionals with surveying, architectural, engineering backgrounds being some of the more traditional skills and also facilities management, occupational therapy and of course members of planning and building control departments.

thinking that you are only asking about the access features. With a new build they should be inherent in the scheme design. Inclusive design principles improve the ease of use for the majority of people – it is not a segregated or specialist provision. Applying the social model of disability, it is the breaking down of the barriers in society and the built environment that are the issue and not about the individuals who face those barriers. Maintenance and service issues which may not become apparent until completion and sign off will become obvious if you are talking about how the building will be used by the people that are intended to use it, for example ceiling mounted lights within a double height entrance area to a block of flats – what happens when the bulbs need to be replaced? This may be a maintenance

concern, but a lack of light at the point of entry becomes an access issue for many. Through guided consultation you think about functions of a site from back to front and can approach the design in a way that negates these potential flaws.

In order for people to make valid contributions they need to have sufficient time to plan for their involvement in a consultation exercise. Organising transport, support or carers, child care or rescheduling work commitments are all equally relevant to any participants.

Once you have identified your relevant target group you need to make sure that your presentation materials and tools are suitable for everyone. 3D tactile models may be necessary, large print versions, easy read versions, communication support through BSL interpreters or a palantypist may be necessary.

All of these elements will have a cost and time impact on the preparation and delivery of a successful consultation exercise. As planning and building control officers you will often see the scales of consultation that are undertaken and submitted as part of applications. You would be able to signpost applicants to the Inclusive Design overlay for further information and guidance if their application was lacking in core inclusive design principles and elements. ■

National Register  Access Consultants

.....
Alexandra Smedley
Manager, and author of the
Inclusive Design Overlay

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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
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Ian Streets
Managing Director
About Access
Tel: 01482 651101
ian@aboutaccess.co.uk
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The National Planning and Building Control Directory

aims to be the one-stop-shop for anyone seeking help and advice or products and services from the construction industry.

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Having built a huge database of over 50,000 email contacts for the construction industry, the Directory is growing at a rapid rate with subscribers joining every day.

www.adjacentgovernment.co.uk

The energy Performance Gap conundrum

The latest report from the Zero Carbon Hub on the energy Performance Gap project, highlights some concerns in addition to specifying areas for further examination. Planning and Building Control Today provide a brief overview of the project so far...

In the April edition of Planning and Building Control Today, Rob Pannell, MD of the Zero Carbon Hub presented the initial findings ¹ of the industry wide project exploring the potential causes to the energy Performance Gap, and proposals to close it.

Fast forward to July and the Zero Carbon Hub released their interim report: ‘Closing the gap between design and as-built performance’ that expanded on those initial findings.

The latest report highlights that a gap in a building’s performance would mean that new housing cannot be relied upon to play as expected, vital for the government’s national carbon reduction plan. For owners it means that energy bills may be higher than expected, undermining their confidence in new (low carbon homes). For planners, designers, manufacturers and house builders the fall-out from underperforming new homes could impact on their reputation and business.

Both government and a wide spectrum of interest groups have been galvanised by these reasons, seeing it as a high priority. To conclude this latest report, over 140 professionals across 90 companies have come together to explore the causes of the performance gap, and to work towards developing cost-effective and realistic proposals that will help to close it. Those professionals have been involved as the project’s Industry Executive Committee, Steering Group and Work Groups.

The guiding principle of the project is described thus: “Develop ideas collaboratively with all relevant parties to ensure support from industry and government throughout the initial funding period and beyond to 2020.”

The project’s scope looks at the complete house building process, from conception through to completion on site. After thorough examinations of the areas that make up this process, conclusions have been made on what the next steps should be.

Next steps

The project has highlighted the sheer number of various issues which are perceived to have the potential to impact the performance gap. The next stages of the project will enable these to be prioritised via the evidence gathering and analysis process. This may also reveal aspects that are not as relevant as initially perceived.

The group has faced difficulties in gathering evidence for some of the issues involved, so the plan is to extend the evidence gathering phase in order to avoid making premature assumptions on the impact and prioritisation of the issues identified. There was always an acknowledgement that the project couldn’t possibly solve all the issues raised and the evidence gathering and development of solutions will need to carry on. ■

Planning and Building Control Today would urge all readers to read the full report available here http://www.zerocarbonhub.org/sites/default/files/resources/reports/Closing_the_Gap_Between_Design_and_As-Built_Performance_Interim_Report.pdf

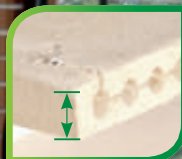
¹ <http://www.adjacentgovernment.co.uk/pbc-edition-003/closing-the-performance-gap/>

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Retrofitting for a sustainable future

Mark Weaver, Sector Marketing Director for Retrofit for Saint-Gobain in the UK, explains the importance of retrofitting to reduce the energy consumption of the UK housing stock...

It is estimated that 22 million houses in the UK need to be retrofitted 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 can we even begin to tackle this?

When we talk about making energy savings and reducing carbon in existing homes, much emphasis is placed on adding sources of sustainable or renewable energy retrospectively. While this is a valid argument, especially as fuel bills from 'conventional' sources are increasing, it is also only one side of a debate that needs a more holistic approach.

While there are numerous initiatives and investment programmes to encourage the supply of future energy, there needs to be equally strong signals on the reduction side of the equation. Improving the energy efficiency in buildings is one of the best ways

to achieve this, providing the fastest return and tangible benefits in terms of energy, economic development, jobs and wellbeing. Saint-Gobain advocates this 'fabric-first' approach to treating the UK building stock.

Of course, in practice we need to invest in a variety of energy production methods and combine these with more energy-efficient buildings, which will deliver the immediate impacts needed to meet Government targets.

Saint-Gobain started working with the Energy House at the University of Salford, leading academics from Leeds Metropolitan University and Saint-Gobain Recherche to prove that whole-house, fabric first retrofitting of homes can deliver significantly reduced energy costs, not to mention lower CO₂ emissions and remove 50% of air leakage. We identified that, with

the installation of multiple systems, energy savings of up to 63% can be easily achieved, especially on poor performing properties. In combination with the energy saving, the property would also be much more comfortable for occupants through reducing air leakage and draughts.

The testing facility allowed us to not only demonstrate a whole-house approach but also to look at the individual steps in retrofitting a home to identify the importance of individual elements on that building's performance. This involved installing and monitoring a full Saint-Gobain solution and then removing each energy efficiency measure, such as wall insulation, to determine its impact on, and importance to, the whole-house performance.

The research carried out at the Energy House used conventional systems from British Gypsum, Glassolutions, Isover and Weber to bring levels of thermal efficiency to the building fabric that are typical of newly built homes. The project also set a realistic pre-retrofit baseline – a 1900 house with 'typical' entry-level energy efficiency interventions of 1990s double-glazing, representative of many houses that would benefit from double-glazing upgrades. 'Old' loft insulation was retained and topped up to match today's requirements.

The retrofit programme reflected a typical 'hybrid' approach to domestic solid-wall insulation with internal wall insulation applied to the front elevation and external wall insulation fitted on the side and rear. Our objective was to measure the performance against conventional retrofit to produce realistic statistics according to what we initially predicted. We wanted to ensure that our results related to the current industry approach by using cost-effective widely available solutions.

Clearly adding measures such as solar panels are going to improve the way energy is used but added to a poorly insulated building is merely solving one problem and not gaining optimum results and savings.



As we continue to analyse the results from the Energy House to develop further solutions, we believe that the initial findings present considerable opportunities for the retrofit market. ■

.....
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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.



Dave Hall

Technical Academy Manager

British Gypsum

www.british-gypsum.com

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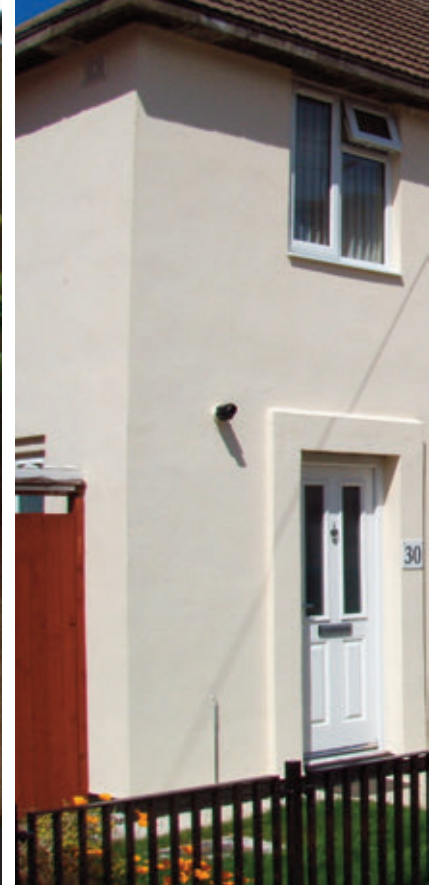
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Around a third of the heat in an uninsulated home is lost through the walls. Installing British Gypsum internal wall insulation solutions can cut heating costs considerably. Gyproc ThermaLine PIR is an option for retrofitting internal wall insulation to existing walls, and the systems are now BBA certified. For more information visit the product section of our website.

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Solid Wall Insulation and the Green Deal

Solid Wall Insulation can dramatically prevent heat loss and therefore save money for householders. The National Insulation Association summarise the advantages of using the Green Deal to assist in this process...

The Green Deal Home Improvement Fund (GDHIF) in England & Wales enables householders to carry out improvements to the energy efficiency of their properties in order to reduce heating bills and claim up to £6000 for Solid Wall Insulation (SWI). The GDHIF scheme is not means tested or restricted by area or property type; therefore they are open to everyone.

The UK's housing stock is estimated at approximately 24.5 million dwellings, of that approximately 36% consist of non-cavity wall construction – solid brick, solid stone, pre 1944 timber frame and non-traditional, i.e concrete construction.

It is estimated that if you live in a home without insulation of solid walls, 45% of the heat is escaping

which obviously costs money. Insulating the walls will dramatically prevent that heat loss in the winter months.

Improving the thermal efficiency of solid-wall properties is an area which has massive potential for the future, as this is an area where very little work has been done to date. However, more and more individuals are now starting to recognise the advantages of insulating such households and this is an area which is now seeing a real growth with many cost-effective solutions now available.

The advantages include:

- Solving of condensation problems;
- Makes the home warm and cosy;



Guildford Street, Grimsby – after

- Reduces fuel bills;
- Saves up to 45% of heat loss;
- Minimum disruption for the householder;
- Internal Wall Insulation: quick and easy to install, improves the thermal efficiency;
- External Wall Insulation: improves appearance of the building.

To insulate a solid wall it still must comply with the current Building Regulations. The main condition to meet is the thermal performance of the insulated wall. In England or Wales it must have a U-value of no more than 0.30 W/m²K. The U-value is a measure of how quickly heat will pass through the wall – as a rough guide around 60mm to 120mm of insulation is required to achieve this, depending on what insulation material is used.

Neil Marshall, Chief Executive of the NIA commented: “The NIA welcomes the launch of the GDHIF and the Government’s continued commitment to helping households to address their cost of living.

“The new GDHIF scheme provides a tremendous opportunity for both householders and the insulation

industry and we are actively promoting the scheme to consumers, and recommending that they choose NIA members to carry out the work in order to obtain additional peace of mind. NIA members are required to meet our robust membership criteria and sign up to a strict code of professional practice.

“It is estimated that if you live in a home without insulation of solid walls, 45% of the heat is escaping which obviously costs money. Insulating the walls will dramatically prevent that heat loss in the winter months.”

“Since the launch of the GDHIF we have been actively communicating the scheme to consumers via the media, consumer groups and charities. We have also set up a new dedicated section on our website with links to our Green Deal Installer and Provider members and DECCs quick guides on the scheme.”

Marshall added: “We have also been actively promoting the scheme to our members and encouraging them to register for it.”

Under the new GDHIF householders can apply for:

- 75% of the cost of Solid Wall Insulation up to a maximum of £6000;



- Up to £1000 for installing two measures from an approved list including cavity wall insulation;
- Up to £100 refund for their Green Deal Assessment Report if at least one recommended measure is installed.

The funding scheme also entitles those who have bought a property in the 12 months before applying to qualify for an additional £500 if they carry out energy efficiency improvements.

Energy & Climate Change Minister, Greg Barker said on the day of the launch: “The Coalition Government is actively helping British consumers cut their energy bills and make their homes warmer and greener too.

“Today, the brand new GDHIF opens for business – offering people up to £7,600 to help pay for an exciting range of energy efficiency improvements. People should apply now for this unmissable offer and cut their bills before next winter.”

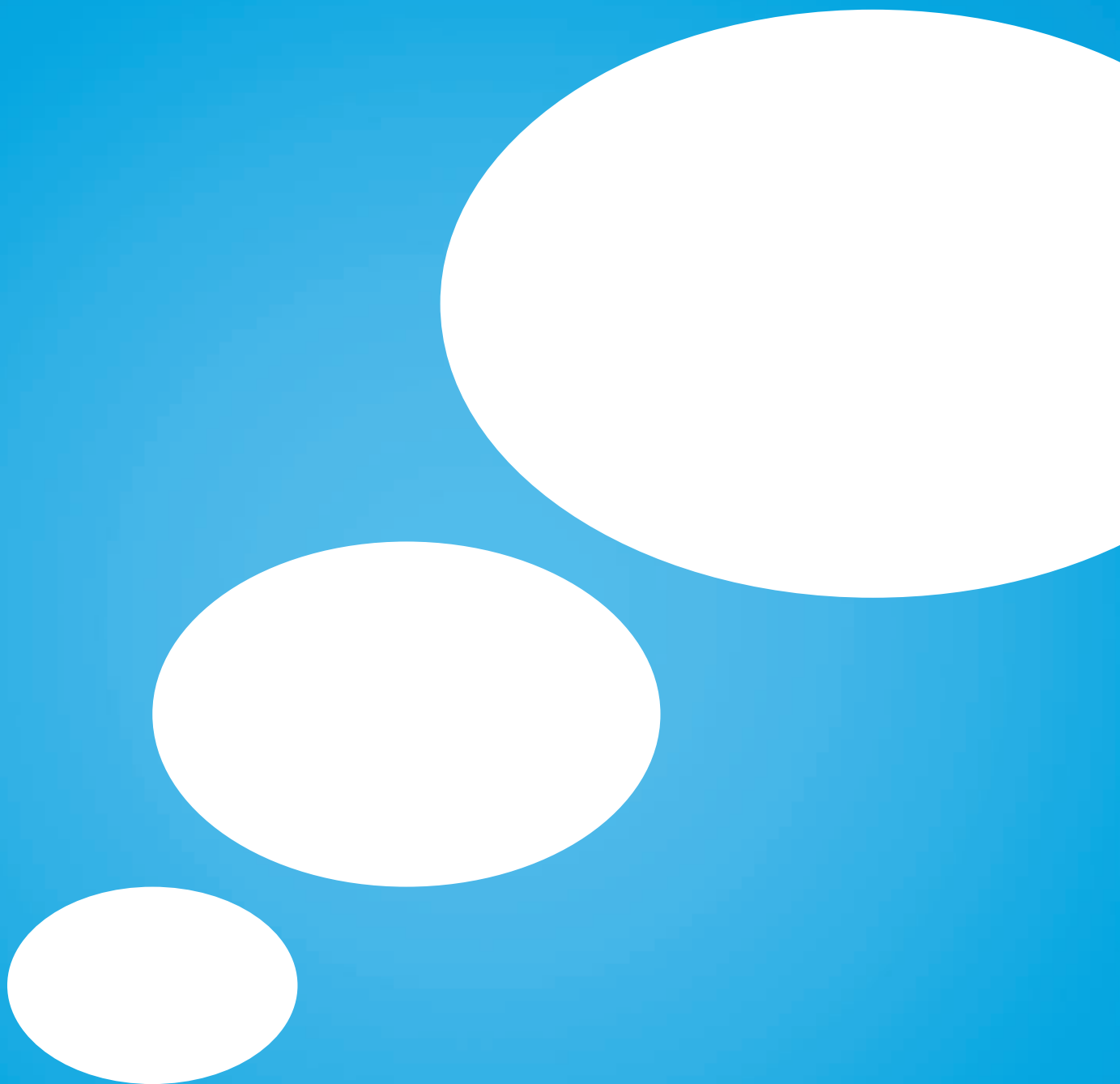
Green Deal Providers and Insulation Installers wishing to benefit from the NIA’s promotion of the scheme and signposting of consumers to its members should contact the NIA as soon as possible to apply for membership.

The NIA represents the manufacturers, system designers and installers of cavity wall, external wall and internal wall insulation, loft insulation and draught proofing. ■



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The National Insulation Association (NIA)
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Insulation: A guarantee of savings

Investing in solid wall insulation brings huge benefits in terms of reduced energy costs and carbon emissions. Steve Tanner, General Manager at SWIGA discusses what its guarantee can offer the consumer...

With many energy saving insulation solutions readily available for homes and businesses large and small, there really is no excuse not to insulate.

Although months away from winter, the Solid Wall Insulation Guarantee Agency (SWIGA) is advising that now is the perfect time for property owners to invest in insulation and combat rising energy costs and climate change sooner rather than later.

The way a building is constructed, insulated, ventilated and the type of fuel used, all contribute to its carbon emissions. A worrying fact is that a significant proportion of the money spent on energy is literally being thrown out of the window as a result of inadequate levels of insulation, with around 58% of the heat being lost through the roof and walls alone. By simply insulating with SWI savings of up to £460* per year can be achieved.

The Solutions

Solid walls can be insulated with either; External Wall Insulation (EWI), Internal Wall Insulation (IWI) or a combination of both and either option will greatly increase comfort, while also reducing energy bills and the associated environmental impact.

IWI typically consists of either dry lining in the form of laminated insulating plasterboard (known as thermal board) or a built-up system using fibrous insulation such as mineral wool held in place using a studwork frame.

IWI has the advantage that it can be installed room by room with the tenants in situ. It increases internal surface temperature within a room and also improves response to heating input when heated intermittently. IWI can also be installed in any weather and cost can be kept to a minimum if combined with other works, e.g. if internal repairs or rewiring is required.

Laminated insulated plasterboard can be used in many situations and is fixed directly to the existing brick. Depending on the system, thermal boards can either be screwed or glued using a dry wall adhesive directly onto the brick work just like standard plaster board. It is normally thinner than studwork systems due to its better thermal conductivity, although there are instances, such as uneven existing walls where a studwork based system may be more suitable.

EWI comprises of an insulation layer fixed to the existing wall, with a protective render or decorative finish including real brick slips or brick effect finishes. EWI increases the thermal quality of the building – particularly relevant when refurbishing non-traditional housing. It also overcomes moisture and condensation issues, protects the existing building envelope can reduce heating bills by up to 25% as well as greatly improve the appearance of the building.

EWI is a tried and tested method of upgrading the thermal performance and external appearance of existing properties which are literally transformed into warm, energy efficient and attractive homes and buildings. Improving appearance is of particular significance to many local authorities targeting housing projects in poorer areas. Adding EWI on a whole street basis will raise residents' morale and give a sense a pride in their community.

There are many benefits of EWI including the fact that no living space is lost. There is minimum disruption for the residents as the work can be carried out while they are in their homes and it also adds a waterproofing layer to the outside of the property which will last for decades with minimal maintenance required.

There are a lot of things for the consumer to consider during the installation of IWI or EWI. Good quality detailing in design and installation is key and different materials and systems are available each with distinct benefits.

Not only does SWIGA provide consumer protection with our independent 25-year guarantee, we can offer the consumer independent industry expertise – our membership includes all major system designers who we can draw on, but we also have an independ-

ent approach and can offer expert opinion on client projects.

We differ from insurance companies in that in the unusual event of installation issues, we will arbitrate on any disputes and get remedial work done, then deal with the contractual aspects between our members afterwards. Our prime focus has always been and is on prevention, not cure. Our Quality Assurance framework is key and our pre-vetting procedures do more than any other to avoid issues from the outset.

The Government's new Green Deal Home Improvement Fund and the Scottish equivalent are a big step in opening up the market for individual householders living in solid wall homes but these schemes won't be enough on their own though.

It is vitally important that the proposed changes to the Energy Company Obligation are decided upon and communicated to the industry and other stakeholders as soon as possible. SWIGA hopes that government increases the Solid Wall Insulation minima from the original proposal otherwise there will be a large gap in their CO₂ commitment, and a large impact on the SWI industry, with many jobs at risk.

Membership of SWIGA is open to SWI installers and System Certificate Holders. For more information about SWIGA please contact Steve Tanner. ■

* Based on a detached gas heated house, with an 81% efficient gas boiler and average gas tariff of 4.21p/kWh and electricity tariff of 13.52 p/kWh; Figures from Energy Saving Trust and valid for 2014.



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Tackling the solid wall syndrome

Tony Millichap, Technical Manager at Kingspan Insulation Limited examines the benefits of internal and external wall insulation, but highlights the importance of good workmanship in order to reap those benefits...

According to the latest statistical release from DECC (December 2013¹), less than 5% of the UK's 7.9m solid walled houses are known to have had wall insulation installed. This means that a significant number of homes, which are often occupied by elderly or vulnerable people, remain expensive and hard to heat.

Because many of these older properties are in conservation areas and may be subject to local planning constraints, treatment of the external facades may be limited. In these cases, Internal Wall Insulation (IWI) provides one of the most cost-effective ways of improving the energy efficiency of these hard to treat buildings.

The benefits of IWI

Even where there are no planning issues, IWI may be the preferred option for semi-detached or terraced solid walled homes, where a differing appearance of adjacent homes or steps in wall profile would be unacceptable.

Apart from the advantage of not affecting the external appearance of buildings, IWI has many other benefits. It can help reduce energy costs and contribute toward the achievement of government CO₂ reduction targets. It allows the thermal performance of the walls to be upgraded without the need to apply for planning permission, and can be installed regardless of weather conditions.

IWI can improve the Energy Efficiency (SAP) and Environmental Impact (EI) ratings of a property, potentially enhancing its value and attractiveness to prospective tenants or house buyers. It can easily

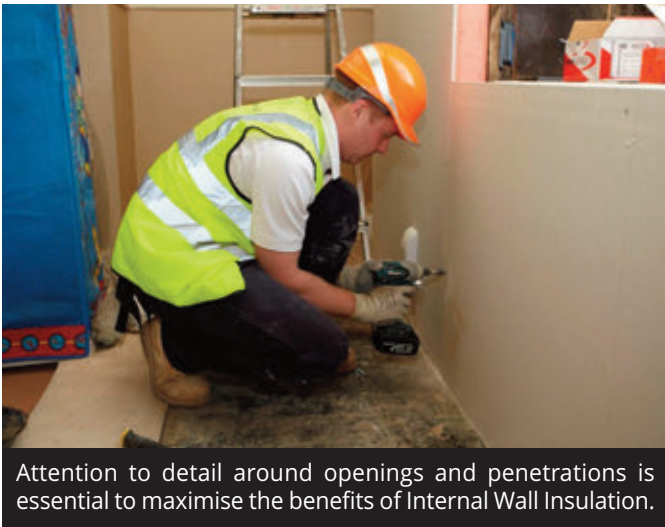


Just 59.5mm of Kingspan Kooltherm K14 rigid thermoset phenolic insulated plasterboard will achieve a U-value of 0.30W/m².K on a 102.5mm solid brick wall

be installed as part of a larger program of renovation, maintenance and improvement works, for example when re-plastering, re-plumbing, re-wiring or fitting new kitchens and bathrooms.

From the perspective of the occupants the change is immediately noticeable, as rooms heat up more quickly, helping to meet comfort levels more rapidly, and in older properties, IWI installations can also improve the internal aesthetic of the house by replacing cracked or crumbling plaster on the walls; all in all, promoting a better indoor living environment.

Where internal space might be an issue, the premium performance of some of the insulated dry-lining products available on the market today, still makes IWI a viable solution, by keeping the thickness of the insulation to a minimum. This helps to maximise living space and reduces the impact of any knock on effects from the installation.



Attention to detail around openings and penetrations is essential to maximise the benefits of Internal Wall Insulation.

The importance of good workmanship

Just as it is important that 'as built' meets the 'designed' performance in new buildings, it is equally important that investment in upgrading existing buildings results in the best possible improvement in performance. Building Control Officers need to be aware of the potential pitfalls when checking the quality of any work being undertaken.

One of the most common errors is the failure to give enough attention to detailing around junctions such as windows, doors, floors and ceilings. Without proper care these areas can act as sources of air leakage or cold bridging. This potentially serves to undermine the improvements in the building envelope through unnecessary heat loss.

Similarly, it is also important that close attention is paid to fixtures and fittings, such as electrical sockets and light switches and penetrations such as water pipes and conduits.

Thinking for the future

Millions of the currently uninsulated solid walled properties in the UK would benefit from IWI, providing energy savings and improved living environments for years to come. However, it is essential that the investment can be fully realised by making sure that installations are performed correctly, and with the required attention to detail. Building Control can play an important part in making sure that happens. ■

¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/294343/Quarterly_Statistical_Release_-_GD_ECO_and_insulation_levels_in_Great_Britain_-_20_March_2014.pdf

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For example, with a thermal conductivity of 0.019W/m.K, just 59.5mm of rigid thermoset phenolic insulated plasterboard (50mm insulation with 9.5mm plasterboard) can achieve a U-value of 0.30W/m².K on a 102.5mm thick solid brick wall, or 0.29W/m².K on a 215mm thick solid brick wall, greatly enhancing the thermal efficiency of the building.

The best of both worlds

A hybrid approach, where IWI and External Wall Insulation (EWI) are installed on different parts of the building envelope, can also be a highly effective solution for many buildings. For example, one could use internal insulation on the front elevation of a property so as to preserve the existing facade, with external insulation on the side and rear elevations to keep thermal bridging to a minimum.

However, while the two systems can be used to complement one another, they also emphasise the current lack of training many IWI installers possess. Whilst most EWI installations are carried out by highly trained cladding contractors, IWI systems are often considered less specialised and are fitted by contractors with a more general knowledge of construction. This gap in knowledge can lead to errors in installation, particularly when it comes down to the fine details, which can then limit the performance and benefits of the IWI.

Energy management in construction: a brighter future

Better energy management within the construction industry could provide vital cash savings and contribute to significantly reduced CO₂ emissions explains Tom Johnston, Chief Operating Officer – Central Certification Services, BM TRADA...

In recent years, the construction industry has been working hard to reduce its negative environmental impact.

This is essential as the sector accounts for as much as 50 per cent of global energy usage, while – according to multi-stake holder organisation Constructing Excellence – around 10 per cent of the UK's carbon dioxide emissions are associated with the manufacture and transport of construction materials, and the construction process. Factor in the maintenance of buildings and other structures and that figure goes up to 50 per cent of UK emissions.

The sector could at one time afford to ignore the problem, but environmental responsibility and sustainability are now at the forefront of corporate activity – with multiple drivers further encouraging construction firms to work towards a greener business model.

The good news is that one of the most effective means of improving a business's green credentials is also one with the potential for delivering significant cost savings: energy management.

Gone are the days when energy was viewed simply as a fixed cost of operations. Now, with spiralling energy prices, growing environmental concerns, and increasing legislation to curb energy wastage and reduce carbon emissions, it is better understood as a finite resource that can, and should, be managed like any other.

Outdated and inefficient energy management systems lead to wastage, which, as with any resource is a

costly and unnecessary drain on finances. A recent study by the Carbon Trust for example, found that large UK businesses are spending an incredible £1.6bn on wasted energy each year.

Failing to address energy management policies also leaves construction firms vulnerable to major financial risk.

Energy prices have sky-rocketed in recent years, reflecting dwindling resources, a growing reliance on imported gas, and escalating concerns over energy security.

Since 2005, the average price of gas has increased by over 40 per cent, while electricity has increased by over 65 per cent for non-domestic consumers. It's a trend set to continue, with energy prices predicted to rise by up to 25 per cent by 2020 according to government adviser the Climate Change Committee (CCC).

At the same time, both the British government and the European Union are putting increasing pressure on industry to improve energy efficiency and reduce the UK's collective carbon footprint.

In 2013, the UK produced an estimated 463 million tonnes of carbon dioxide – the primary greenhouse gas and a major contributor to global warming. Under the Kyoto Protocol, the UK Government has a legally-binding target to reduce emissions and since 2001 has operated a Climate Change Levy (CCL) to provide heavy-energy users with an incentive to increase energy efficiency and reduce carbon emissions.



Tom Johnston
Chief Operating
Officer – Central
Certification Services
BM TRADA

It has also introduced the CRC Energy Efficiency Scheme which affects large firms – those that consume over 6,000 megawatt-hours (MWh) of qualifying electricity per year are obliged to register – and requires compulsory purchase of allowances to offset emissions.

ISO 50001:2011 Energy Management Certification

The new ISO 50001:2011 Energy Management Certification – the international standard for energy management – has been devised specifically to help businesses improve their energy efficiency. It provides an effective framework for improving energy performance, efficiency and consumption, and integrating this into management practices.

The standard gives construction firms an understanding of where energy is being used and where it can be saved on and off-site. Significant savings could, for example, be achieved by investing in energy-efficient cabins, more fuel-efficient fleet vehicles and construction equipment, and a reduction in the use of portable diesel generators.

A 2010 study by Arup on behalf of the Strategic Forum for Construction and Carbon Trust estimated that improving energy efficiency by 15 per cent within the construction industry could reduce annual greenhouse gas emissions by 750,000 tonnes of CO₂, and bring energy cost savings of around £180m.

In addition to bringing significant reductions in operational costs and protecting against future energy price spikes, becoming certified to the ISO 50001 Standard also provides assurance that a firm is meeting the latest regulatory requirements

For example, having ISO 50001 could potentially exempt companies from ESOS (Energy Savings Opportunity Scheme), a new piece of EU legislation which requires member states to introduce a mandatory programme of energy audits for 'large enterprises' (those with more than 250 employees or a turnover in excess of £50m).

It also sends out all the right messages about a firm's commitment to energy reduction, best practice and sustainability – an important consideration given that the spotlight is falling more and more on contractors to prove their green credentials during the tendering process, with firms unable to demonstrate this finding themselves at a distinct competitive disadvantage.

The new standard is easy to implement, is designed to cause minimal disruption and will help businesses to implement the processes they need to understand their baseline energy usage and establish a best practice energy policy throughout the business, including plans, targets and KPIs for reducing energy consumption. ■

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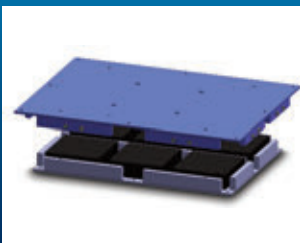
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Bridging the thermal gap

Understanding and mitigating for thermal bridging is an important aspect of an energy efficient building. Stuart Clark, Technical Manager at Energist UK addresses the challenges...

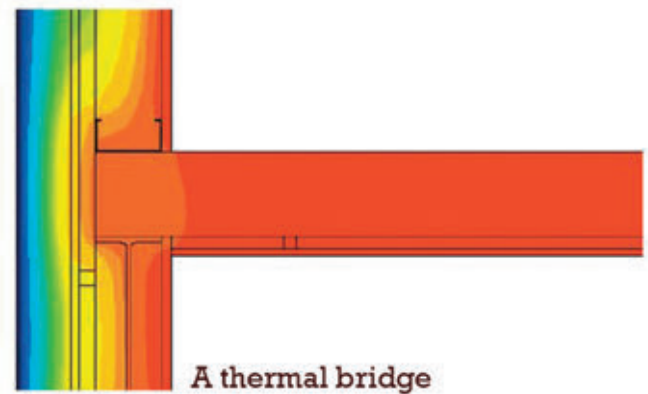
Thermal bridging is a term that is often bounded around in the world of energy efficiency, but often not entirely understood. It can be a complicated beast which is sometimes viewed as a regulatory burden. But if you can make thermal bridging work for you, you will ultimately be able to create buildings that are energy efficient with low running costs, avoiding mould growth and also making it a lot easier to meet the requirements of Part L.

So what is thermal bridging? Effectively it's anywhere within the building envelope where the insulation layer is not continuous and heat is lost. This not only results in a less energy efficient building, but can also lead to condensation and mould risk.

There are 2 main types of thermal bridging in a building; repeating and non-repeating thermal bridge:

- **Repeating thermal bridges:** where thermal bridges form a regular pattern in a construction – the best example here is where wall ties penetrate the insulation.
- **Non repeating thermal bridges:** these are irregular areas of heat loss in a property, often where different elements of the building meet. For example the junction between a ground floor and a wall is a thermal bridge and so too is a lintel. These are also known as linear thermal bridges.

The heat loss of repeating thermal bridges is taken into account in a U value calculation. The heat loss of linear thermal bridges is measured using a psi



value – w/m.k ; how much energy is lost per metre of thermal bridge.

You may also see a Y value quoted when it comes to thermal bridging – this is the figure used to represent total heat loss from a dwelling from thermal bridges – usually between 0.03 – 0.15.

What are the options?

Part L1A 2013 requires that reasonable provision be made to avoid thermal bridging. This can be demonstrated by adopting detailing from one of the following documents:

- Accredited Construction Details (available from the Planning Portal) – giving a Y value of approximately 0.08;
- Enhanced Construction Details (from the Energy Saving Trust) – Y value of approximately 0.04;
- Constructive Details (from BBA and Robust Details) – Y value of 0.04-0.06. Masonry construction only;
- Concrete Products Association Details.



“...if you can make thermal bridging work for you, you will ultimately be able to create buildings that are energy efficient with low running costs, avoiding mould growth and also making it a lot easier to meet the requirements of Part L.”

Using details from these handbooks would be sufficient to demonstrate compliance and you can also mix and match details from any of these handbooks.

Where it is not possible to use these details, worse case default psi values can be used – but beware – these could make meeting the Target Emission Rate much more challenging.

Alternatively, the psi value for a bespoke junction could be calculated using approved software. This is a costly option, but if you regularly use bespoke junctions, it's well worth checking out.

It's often common for many apartment blocks, especially those of a concrete frame construction, to use bespoke and complex detailing. In this case, the standard details listed above often can't be used and you're into the realms of calculating bespoke psi values or using the poor performance defaults, and offsetting elsewhere.

Just also be aware that where you do move away from an approved junction, your building control inspector may well require a psi value calculation to ensure that there is no condensation risk or excessive thermal bridging.

So how can thermal bridging work for you?

It's linear thermal bridging that is a huge focus of Part L. When SAP 2012 will calculate your Target Emission Rate, it will use a Y value of approximately 0.05. So you will need to be building to high performance thermal bridging junctions to help achieve compliance. Firstly, check out the Enhanced or Constructive Details – if you can build to these you'll find you meet your TER without too much hassle. Secondly, ask your lintel supplier for a psi value. They may be able to provide it to you and it could be a lot better than the default figure. Finally, if you use non-standard junctions on a regular basis, consider getting their psi value calculated – especially on large apartment blocks where there are many repeating junctions – it could allow you to make savings elsewhere in your specification. ■

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Technical Manager

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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).

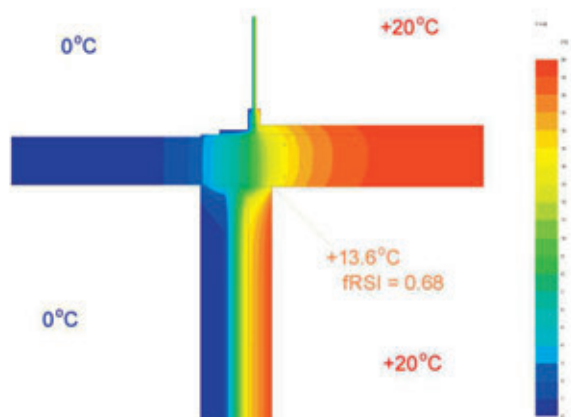


Fig 8. Direct connection (Case 1). This detail **DOES NOT** conform with UK Building Regulations Part L requirements for minimum temperature factor in dwellings ($f_{RSi} = 0.75$)

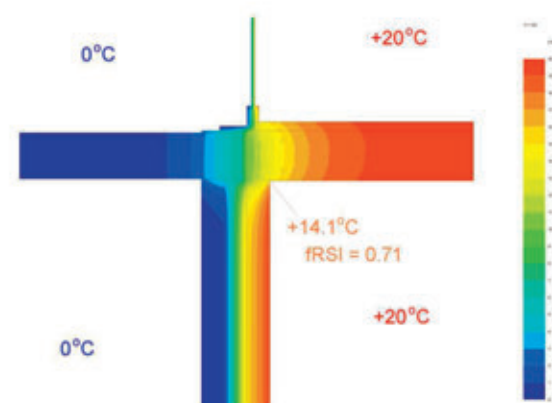


Fig 10. 20mm pad connection (Case 3). This detail **DOES NOT** conform with UK Building Regulations Part L requirements for minimum temperature factor in dwellings ($f_{RSi} = 0.75$)

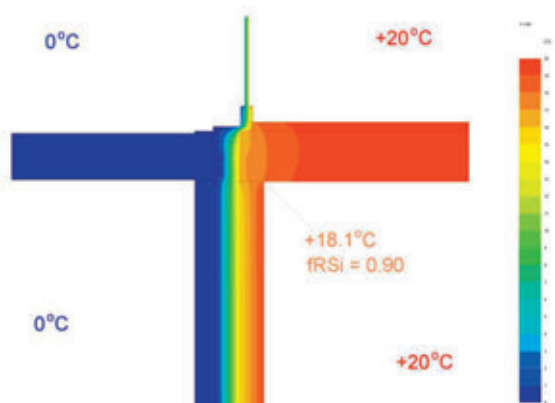


Fig 11. KS14 H200 connection (Case 4) where this detail **DOES CONFORM** with UK Building Regulations Part L requirements for minimum temperature factor in dwellings ($f_{RSi} = 0.75$)

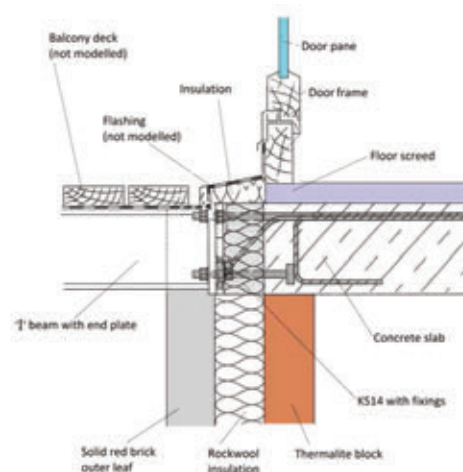


Fig 2. Schöck KS14 unit used with masonry wall and concrete slab

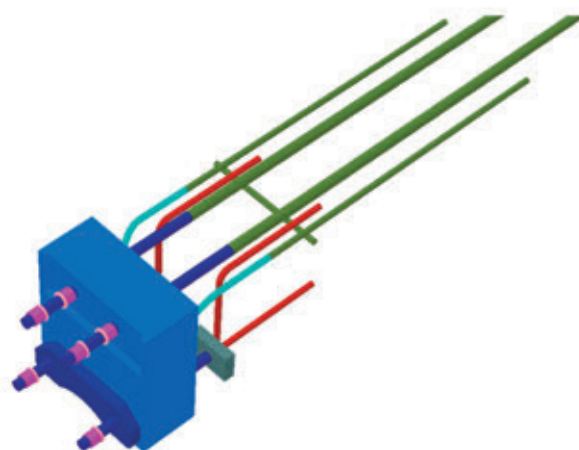


Fig 3. The KS14 unit SOLIDO model (surrounding construction omitted for clarity)

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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Thermal bridging: Confidence in accreditation

Addressing the thermal bypass and bridge dilemma can be difficult, especially when dealing with the bridging aspect. John Tebbit, Managing Director, Robust Details Ltd examines the challenges posed and the need for third party accreditation...

Bridges and bypasses are well known to all road users. Indeed they are generally regarded as good things as they get us over obstacles, speed up our journeys and save the inhabitants of the bypassed communities the noise and fumes from road traffic. However, as is often the case, when we move into the area of building physics and in particular thermal issues, what is seen as good in other areas is definitely bad for thermal performance. Rather than speeding up the traffic, we speed up the flow of heat, generally from our warm homes to the colder outside. That means higher fuel use, fuel bills and carbon emissions. It also increases the chances of condensation and mould. All in all, thermal bypasses and bridges are things we want to avoid. Fortunately we do have quite a bit of knowledge and guidance in this area.

Taking the issue of bypasses first, these can be avoided by good design and so then do not have

to be considered. These are where warm air can circulate in some way into a colder area and thereby transfer energy. The best known of these is the party wall bypass where air in the cavity sets up circulation taking heat from the warm rooms either side, and moving it to the colder loft where energy is transferred. The effect can be seen in the photograph opposite, where the melted snow on the roofs corresponds with the party wall positions.

The answer has been to stop the circulation and this is typically done by filling the cavity with insulation along with effective edge sealing of the party wall cavity as illustrated above. We have full filled party wall details that have also been tested to prove that filling the cavity did not compromise sound insulation.

Thermal bridging is more problematic in that even with good design the bridge often remains, even if it is no longer a four lane motorway for heat, but a

slow single lane track. Also rather like real bridge design, the calculations to assess the size of the bridge are not easy. It is not something that can be done with a pencil and paper or even a spreadsheet. Typically one needs to use finite element analysis software. To make life even worse, there is not even a rigorous, unambiguous set of assumptions, simplifications and rules on how to use the software. There is guidance such as the BRE paper BR497 but even that has considerable room for judgment.

“Indeed, for the house builder looking for ways to improve the performance of the dwelling it is difficult to be confident about the rigour of assessment that any particular detail has been through, as there is currently no requirement for third party accreditation or even assessment of competence for the modellers.”

There is also the issue of whether the design that is intended to minimise bridging is buildable in real life. Details that look good in two dimensional sections may turn out to be impossible to build in three dimensions, or at corners without resorting to hyper dimensional black belt origami with membranes. Anything that requires absolute precision or dry, dust and grease free working conditions is unlikely to be reliably reproduced on a building site.

For these reasons Robust Details and BBA set up a joint venture – Constructive Details (<http://www.constructivedetails.co.uk/>) to develop and disseminate junctions that were high performance, robust and buildable. A number of companies and trade associations have worked with Constructive Details to deliver a range of junctions all of which are free to download.

There are other places to find junctions including many manufacturers, BRE and government. However, not all will be up-to-date or assessed to the same level of scrutiny. For those who are less worried about how realistic the construction is either in its theoretical performance or for its onsite buildability,



Image: BPC, Edinburgh Napier University

there are no real barriers to so doing. Indeed, for the house builder looking for ways to improve the performance of the dwelling it is difficult to be confident about the rigour of assessment that any particular detail has been through, as there is currently no requirement for third party accreditation or even assessment of competence for the modellers.

It is virtually impossible for a non-expert to look at a junction and its performance data and judge whether it is likely to be true. The chances of building control being able to police this area are almost non-existent. In terms of thermal bridging and the claimed performance of details, if it looks too good to be true, then it probably isn't true. Therefore, until a third party accreditation system is introduced that all parties have to adhere to, this is very much an area of caveat emptor. ■

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The evolution of Party Walls

Masonry party walls have seen many changes over the years, driven by the need to improve acoustic performance, prevent thermal bypass and reduce the cost of installation. Tom Foster, senior product manager at Saint-Gobain Isover, looks at the evolution of the masonry party wall and how Isover have supported the industry in developing a better performing construction.

1900-1950

During the first half of the twentieth century the majority of homes were built with a solid brick party wall. The acoustic performance was relatively good due to the high level of mass, and restriction in air movement also ensured no heat could be lost from the party wall via thermal bypass, a concept that would not be identified for many years.

Despite good acoustic and thermal performance, the cost of materials and speed of installation were too high, which resulted in the industry gradually moving to a cavity wall construction in the 1950s and 1960s.

1950-2003

The acoustic twin leaf concept was introduced to reduce mass from the construction by around a third, without negatively impacting acoustic performance. The introduction of the cavity allowed the industry to build the same standard of wall more cheaply and quickly.

The unforeseen consequence was that, by introducing an empty cavity, the industry had created a way for heat to escape from the building – a concept that would later be known as ‘party wall bypass’.

2003-2010

Developments in the past ten years have primarily been driven by the introduction of Approved Document E 2003, which set out a minimum 45dB requirement for party walls, as well as on-site pre-completion testing (PCT). The requirement for PCT, while effective at enforcing the regulation, proved a burden to house builders and so Robust Details Limited was established as an alternative route of compliance in 2004.

In 2005, Isover were the first to market a series of Robust Detail compliant proprietary party walls that removed the requirement for PCT and the labour-intensive parge coat, without negatively impacting the acoustic performance. This was achieved with a partial-fill insulation product called Isover RD35 and was the first time an insulation product had been used in the party wall, something that has now become an industry norm.

Despite this leap forward for the industry, the partial-fill construction still didn't fully address heat loss through thermal bypass, an issue that was gaining momentum within the industry.

2010-Present

After work was carried out by Leeds Metropolitan University to prove the concept of party wall bypass, steps were taken to address the issue in the update of Approved Document L in 2010.

Once again, Isover were the first to market in 2009, a year before the regulations were introduced, with Isover RD Party Wall Roll. This full-fill roll restricts air movement within the cavity and when installed with effective



edge sealing, helps the house builder to claim a zero heat loss party wall.

Summary

Since the introduction of Approved Document E 2003, Saint-Gobain Isover has been at the forefront of maximising acoustic performance, reducing cost of installation, and removing thermal bypass from party wall structures.

Isover offer the widest choice of proprietary full-fill Robust Details on the market. E-WM-17, E-WM-20 and E-WM-24 all deliver three credits towards the Code for Sustainable Homes, remove the requirement for parge-coating and help to deliver a zero U-value party wall.



Tom Foster
Senior Product Manager
 Saint-Gobain Isover
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- 3 credits towards the Code for Sustainable Homes
- No requirement for render or parge-coat

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The case for insulating party cavity walls

Recognising that cavity walls are a source of heat loss, Nick Ralph from the Mineral Wool Insulation Manufacturers Association (MIMA) looks at the background to the changes and the solutions available to meet the requirements of Part L...

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

The study demonstrated that heat energy from both dwellings can escape into the party wall cavity. This causes free moving air in the cavity to warm and rise up through the cavity, bypassing the loft insulation and - in a majority of cases - continuing to the roof line where the air and heat energy escape to the external environment. As the warmed air in the cavity rises, cool air from adjoining external cavity constructions is drawn into the party wall cavity, forming a chimney stack effect and a significant source of continuous heat loss. In addition, windy conditions can induce differential pressure that leads not only to heat losses at the junction of the party cavity with both external walls and suspended floors, but also increased heat loss due to the stack effect of the cavity.

A series of field trials conducted on the party wall cavities of terraced and semi-detached masonry houses revealed 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/m²K. If not addressed, this has a considerable effect on a dwelling SAP score and needs



to be countered through additional enhanced performance in other areas, in order to bring the dwellings SAP score up.

As a result, there was an inclusion in the amended 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. Full-fill mineral wool insulation is particularly suited, as together with effective edge sealing, it has been proven to comply with the requirements for a zero U-value without compromising acoustic performance. Indeed, since the inclusion, a number of solutions have been approved as Robust Details, and can therefore be used to comply with the requirements of Part E1 in England and Wales without pre-completion testing.

Mineral wool is easy to install and is also non-combustible, providing in-built fire protection and effectively contributing to the fire safety of buildings. Mineral wool insulation is one of the few building materials that saves energy in use and reduces the need for combustion of fossil fuels to provide energy for heating or cooling of buildings. The recycled content and recyclability of the material also reduces waste disposal needs and saves valuable resources both now and in the future. This is reflected in the Green Guide A+ rating of mineral wool party wall insulation products.

The case for retro-fitting party cavity walls

Through its work with Leeds Metropolitan University and the BRE, MIMA has also more recently proven the case for retrofitting existing party cavity walls using blown fibre mineral wool, prompting DECC's plans to include the measure in the latest RdSAP changes for Green Deal and in turn making it eligible for ECO.

Leeds Metropolitan University undertook a series of field tests over four heating seasons between 2008 and 2013, to analyse the effects of filling existing party cavity walls with mineral wool insulation, using conventional cavity blowing techniques. Taking a mid-terrace house, which was built between 1990 and 2001, the study demonstrated an annual saving of 1,978 kWh of energy and 0.38 tonnes of CO₂ – equating to a £70 reduction in household energy costs. The performance improvement was modelled

on RdSAP at an improved effective U-value from 0.20w/m²k to 0.05w/m²K.

It was these results that lead to the measure being included in RdSAP, which is expected to come into force in August 2014.

About the organization

Representing manufacturers of stone and glass mineral wool insulation, MIMA aims to provide an authoritative source of independent information on the products' properties and applications; and is recognised for its contribution to a wide range of consultation exercises relating to energy saving strategies and the improvement of the built environment.

MIMA has been instrumental in bringing about changes to Part L of the Building Regulations and RdSAP for Green Deal to address the issue of significant energy leakage.

The trade body has close relationships with central government, local authorities and research institutes. It is actively involved in the development of relevant directives and regulations; and in particular has championed the use of Building Regulations to drive change in building practices to improve delivered thermal performance and measure real, in-situ performance. ■

For further information on MIMA and technical guidance on insulating party walls visit www.mima.info

.....
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Part L compliance: energy efficiency rules

Meeting Part L and the energy efficiency aspects is explained here by Stephen Smith, Market Development Manager at Knauf Insulation Northern Europe...

The amended Part L of the Building Regulations has finally come into force, applying to all developments registered with Building Control from 6th April this year. Approved Document L1A (ADL1A) now contains the revisions relevant to new build housing, which the Government hopes will prove an important step on the way to its 2016 zero carbon homes target.

To this end, one of the key changes in ADL1A is that the target emissions rate (TER) of new dwellings has been reduced by 6% across the build mix relative to Part L 2010. But in addition to this, a new target has been introduced in order to focus design teams' attention on reducing energy use and highlights the importance of a Fabric First approach to help achieve overall energy targets. This is known as the target fabric energy efficiency (TFEE), which places a limit and minimum level of performance on the building fabric of the home. The target is based on the performance of a notional dwelling of the same size and shape as that being assessed, but with fixed values for the fabric performance (U-values, thermal bridging, air tightness etc.).

One of the simplest changes to the Document is the introduction of an "elemental recipe" which is detailed within the "notional dwelling specification". If the "notional dwelling specification" is adopted in its entirety then this will be sufficient for the dwelling to comply with the target fabric energy efficiency and target carbon emission rate requirements of ADL1A. However, the 2013 version has been drafted to allow some design flexibility in achieving it.

As with any recipe the blend of ingredients can be amended to suit the needs of the individual or developer, which in this instance means that there is

great deal of scope when it comes to the specification of elemental fabric U-values. Some of the U-values in the elemental recipe in Approved Document L1A may not be beneficial to all house builders and developers, in terms of a practical and commercial approach.

As an example, consider a cavity wall U-value within the notional dwelling at $0.18\text{W/m}^2\text{K}$. This requires a wall thickness between 365mm and 380mm. To achieve compliance with 2010 Regulations, the majority of volume house builders are constructing cavity walls to a U-value of $0.25\text{W/m}^2\text{K}$. It is possible to exercise the design flexibility, which has been included within ADL1A 2013 and adopting a more practical approach. Improving on other elements such as pitched roofs insulated at ceiling level (we would recommend a U-value of $0.11\text{W/m}^2\text{K}$ rather than $0.13\text{W/m}^2\text{K}$), it is possible to maintain the cavity wall U-value of $0.25\text{W/m}^2\text{K}$ with an overall wall thickness of just 300mm.

We can provide technical assistance to help demonstrate how compliance can be achieved with all house types with a practical, yet sensible fabric approach. We also encourage house builders and developers to work closely with our [Technical Support Team](#) or to use the company's comprehensive Part L 2013 guide, to make sure that what it recommends is best suited to the project's needs and not just a compliance exercise. ■

.....
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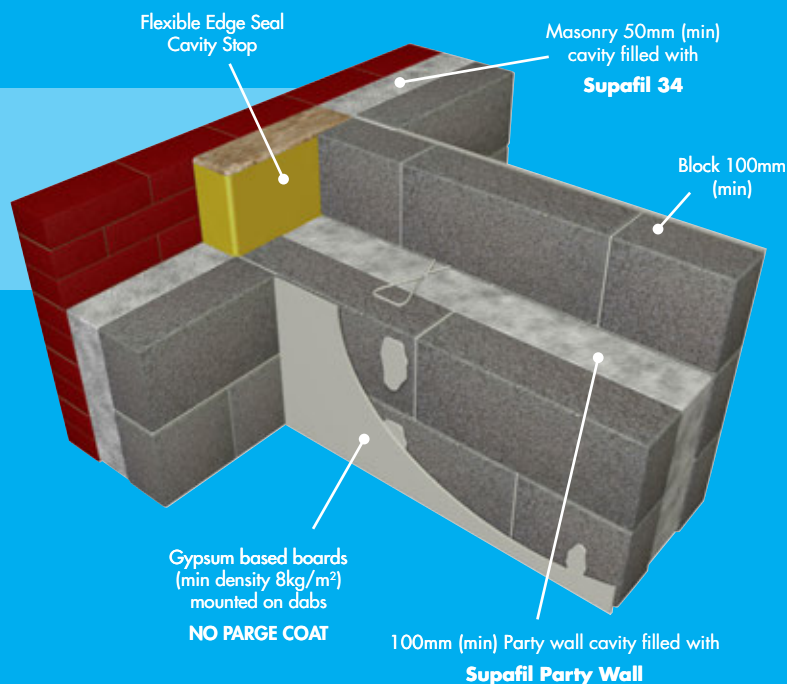
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The Third Surveyor

James Jackson, Head of Training and Education with the Faculty of Party Wall Surveyors outlines the role of the Third Surveyor in Party Wall matters...

Previously, my colleague Alex Frame and I have provided information and guidance about party wall matters via [“a message to Local Authorities”](#), [“Creating a paper trail”](#) and [“Educating the Party”](#). Alex and I teach the Party Wall etc. Act 1996 to seminar delegates and we try to ensure that they are fully aware of the position of the Agreed Surveyor, Appointed Surveyors and the Third Surveyor, all of which perform fundamentally different roles within the party wall process.

To many practicing Party Wall Surveyors the following advice and guidance may appear to be common sense, but when responding to queries and concerns from members of the general public and also from some practicing Party Wall Surveyors, it is amazing how frequently it becomes apparent that there has been a complete failure to follow the procedures laid down by the Party Wall etc. Act 1996 in the appointment of Surveyors and the consequential effect upon the selection of a Third Surveyor.

The first point to be made is where an Agreed Surveyor has been appointed, he acts on behalf of both the Building Owner and the Adjoining Owner and the role of the Third Surveyor cannot be created. The Agreed Surveyor acts alone and there is no other person to respond to should either of the owners feel dissatisfied with his performance. He stands or falls as a direct consequence of his level of competence.

The Agreed Surveyor, once appointed by both the Building Owner and the Adjoining Owner, fulfils the role of an independent impartial surveyor who should be able to stand alone and not only demonstrate sufficient competence when implementing

the Act, but should also possess an appropriate level of construction knowledge and experience commensurate with the level of complexity of the proposed Party Wall works. Although the Act states that any person, other than the parties to the dispute, may act as a Party Wall Surveyor, that does remain the case regardless of the obvious disadvantages which would almost certainly arise if a Surveyor was appointed who did not come from a construction industry background.

There is an argument that where an Agreed Surveyor has been appointed, the Act should provide for a “long stop” situation whereby another person similar to the Third Surveyor should be put in place, in order that either of the Appointing Owners may refer to this equivalent to the Third Surveyor person in the event of either of them not being happy with the conduct and/or actions of the Agreed Surveyor. There appears to be little support for such an appointment or selection as the case may be, but I am well aware that the cost of appealing an Award prepared by a less than competent Agreed Surveyor may prove to be prohibitive, particularly so when the proposed works are small or of a minor nature.

At present, the Act does not make any provision for such a further appointment and as it is unlikely that there will be any amendments made to the current legislation for some considerable time to come, we must make do and implement what we already have.

The above issues lead me naturally into the concern that we as Party Wall Surveyors must never be casual in our work, whether when acting as an Agreed Surveyor in an apparently straightforward matter, or



when engaged upon a complex major city centre project. The larger and more complex the work, the more likely it is that two Surveyors should be appointed and thus, will need to select a Third Surveyor.

There should be no exceptions to the Duty of Care whether when acting as an Agreed Surveyor or as one of two appointed Surveyors. The first duty is to ensure that they, themselves, have been properly appointed by bona fide Building Owners and/or Adjoining Owners and should provide copies of each other's letters of appointment for mutual inspection prior to acting. Having satisfied themselves that they are properly appointed it is their duty to select a

Third Surveyor "forthwith" i.e. without delay and prior to carrying out any work, whatsoever. Once the two Appointed Surveyors have agreed upon the selection of a Third Surveyor it is good practice to inform the Third Surveyor of their selection and ask him if he is willing to act in the event of there being a need to refer matters to him.

Third Surveyors are always "selected". They are never appointed even when called upon to act.

Although it is commonplace not to inform a Third Surveyor of his selection, notification thereof should not be overlooked insofar as a potential Third

Continued on page 124...

What is a party wall?...

Why does it matter?

If you have walls shared by adjacent properties, they are usually jointly owned by the two owners and are termed party walls. A party wall isn't only the wall between two semi-detached properties, it is also; a wall forming part of only one building but which is on the boundary line between two (or more) properties; a wall which is common to two (or more) properties, including where someone has built a wall and a neighbour has subsequently built something butting up to it; a garden wall, where an extension wall butts up against it and; is used to separate the properties but is not part of any building; the floors and ceilings of flats, apartments, and marionette's.

If you share a party wall you have a legal responsibility when it comes to carrying out certain works. The Party Wall Etc Act 1996 that came into force in 1997 gives right and responsibilities to both sides sharing a party wall when one or other party wall owner is planning or undertaking work on the said party wall. The Party Wall Etc Act 1996 is there to enable the building owner to proceed with the works, having obtained building regulations and/or planning consent. It is to protect both the building owner and adjoining owner by ensuring that their property and rights are protected.

What work is allowed without needing a Party Wall?

If you are only doing small jobs, such as putting up shelves and wall units, replastering, or electrical rewiring, you do not need to notify anyone.

What work requires a Party Wall Agreement

The types of work covered by the Party Wall Etc Act 1996 include: demolishing and/or rebuilding a party wall, increasing the height or thickness of a party wall; inserting a damp proof course; cutting into the party wall to take load bearing beams; underpinning a party wall.

When do I need to give notice?

If you think that any work you are proposing might have an effect upon the structural strength or support function of the party wall, or might cause damage to the neighbouring side of the wall, notification must be made. If in doubt, advice should be sought from a professional surveyor.

Should I talk to my neighbour first?

You can discuss your plans with your neighbour first. You may find that they have no objections, or would go halves with you on the work because they consider the job needs doing, too. Even if they are not supportive of your decision they will no doubt appreciate being asked for their opinion. Regardless of whether they agree to the work being undertaken, and if the planned work to an existing structure falls under the Party Wall Act, formal notice must be served.

Who should I speak to?

We are members of the Chartered Institute of Building (CIOB), the Faculty of Party Wall Surveyors (FPWS) and the Chartered Institute of Arbitrators (CI Arb). We are approved by the Safe Contractor Scheme.

A Party Wall surveyor

Here at PD Building Consultancy, we have Paul Dainty, he is a specialist in all Party Wall matters. Paul has worked within the construction industry for over 35 years and has a wealth of in depth knowledge and experience within this industry. We are just a phone call, if you are worried or confused by The Party Wall Etc Act 1996, Paul will be able to give to you, clear and impartial advice on all Party Wall matters.

Mediation

Paul is a member of Chartered Institute of Arbitrators (CI Arb), and holds a certificate in Commercial Mediation. Sometimes disputes arise and we offer mediation services for such instances, mediation is used as a more cost effective form of dispute resolution. Being a mediator means that Paul is appointed by both disputing parties to act as an impartial link between the two parties and in this role he can assist in achieving a resolution which is acceptable to both sides.

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Continued from page 122...

Surveyor may not be willing or able to act when called upon to do so. He may have become ill, or be involved in other demanding and time consuming work, or may have to declare himself incapable of acting because of a potential conflict of interest or, quite simply, he may not be inclined to accept his selection. Third Surveyors do not have to accept their selection if they are disinclined to do so and are not required to state their reasons for thus declining.

There will be occasions (fortunately not frequent) when the two Appointed Surveyors are unable to reach agreement as to the selection of a Third Surveyor. Established practice (which does not necessarily have to be followed) is for the Building Owners Surveyor to suggest a list of three potential Third Surveyors for the consideration of the Adjoining Owners Surveyor who may choose to object to all of them and then suggest three alternatives of his own choice. Should the various suggestions prove unacceptable to both of the Appointed Surveyors, the procedure for resolving the impasse is to refer the matter to the Appointing Officer (Section 10.8. of the Act). This issue is particularly relevant to Local Authorities insofar as they are required to ensure that there is an Appointing Officer available should the need arise for him to act.

The term “Appointing Officer” is in itself a misnomer insofar as the Appointing Officer, normally the Chief Building Control Officer (but not necessarily so) of the relevant Local Authority, selects a Third Surveyor. He does not appoint him. Some Local Authorities remain unaware of their duties under the Party Wall

etc. Act 1996 and you may be faced with the need to inform them that that they cannot abdicate their responsibility in this matter.

Should you need to refer the selection of a Third Surveyor to an Appointing Officer, it is good practice to inform him of the names of those persons whose names have proved unacceptable to the two Appointed Surveyors insofar as there is no right of appeal against the selection of any person made by an Appointing Officer.

Either of the two Appointed Surveyors or either of the Appointing Owners may refer any matter to the Third Surveyor. See Section 10.11. of the Act.

It is a Duty of Care for Appointed Surveyors to advise their Appointing Owners as to who has been selected to act as the Third Surveyor and to inform them as soon as the selection has been made. Failure to inform Appointing Owners accordingly will deny them their right to refer any matter of their choice to the Third Surveyor, and it therefore goes without saying that it is too late to inform them of the name of the selected Third Surveyor within the Award at the time of its service. It is also considered good practice to add the caveat when advising Appointing Owners as to who has been selected to act as the Third Surveyor, 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 such matters to him. ■



.....
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A Party Wall Notice: dissent is just the beginning

Issuing a Party Wall Notice is only the beginning of a long process. It can still take time to get an award in place and here Sara Burr, Chair of London Committee and Vice-Chair of National Committee of the Pyramus and Thisbe club details the next steps...

Following from on my first article in Planning and Building Control Today: “Towing the Party line”, where I discuss the pitfalls of not issuing a Party Wall Notice, in this article I explain what happens when an adjoining owner dissents.

Here, timescales are everything. Once an adjoining owner dissents, the statutory timescales aren’t necessarily the governing factor in concluding matters. The quality of information and details will quite often determine how long it takes to get an award in place, as well as the time taken to arrange an inspection to record the condition or even method statements, in addition to whether a contractor has been appointed – not to mention how effectively the adjoining owner’s surveyor acts.

One of the most frequently asked questions is “when can I start work?” with the answer reflected in the statement above.

Apart from the statutory notice periods, technically if an adjoining owner dissents to a notice then work can’t start until an award is in place. Even when that is in place an adjoining owner has to waive their right of appeal and the expiration of the statutory period for party wall notices.

Once an award is served, the owner has 14 days in which to appeal an award. What does that mean and why would anyone want to appeal an award? In simple terms it means that the adjoining owner or building owner is not happy with the content. Surveyors generally try to avoid agreeing and serving awards that are likely to be appealed, but it does happen. The reasons or grounds for appeal will be covered in future articles as it’s a topic in its own right, together with how to appeal an award.

So back to the original question – how long does it take to get an award in place? What if you don’t get a response to the notice? After 14 days a further 10 day notice is given requiring a response, otherwise a surveyor will be appointed to act on their behalf as they will be deemed to have dissented as no response has been received. After the 10 day period, if no response has been received then the building owner’s surveyor appoints a surveyor to act on their behalf. That surveyor is obliged to contact the adjoining owner to arrange access to carry out an inspection to record the condition of the property before works starts. It is not a requirement of the Act or a pre-requisite to making an award. It is however incredibly useful to have should a dispute arise in the future as to whether cracks or damage were pre-existing.

Your surveyor shouldn’t delay when it gets to this point – if an adjoining owner hasn’t responded to any correspondence when you get to this point, then you are unlikely to get access so they should proceed to award without. It can always be caveated that an inspection will be undertaken prior to works commencing if access is suddenly forthcoming.

If there is co-operation between surveyors, awards can be put in place quickly. It also depends on the work involved and the complexity, but don’t expect to get an award for a basement in place overnight. ■

.....
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The fire safety competency challenge

The fire sector has responded to questions raised by Brandon Lewis, former Fire Minister, at a recent conference. Here, Graham Ellicott, CEO of the Fire Industry Association (FIA) provides an overview of the discussions...

The opening address at a recent 'fire event' in the Palace of Westminster was given by Brandon Lewis, Department for Communities and Local Government (DCLG) former Under Secretary of State (aka the 'Fire Minister') with responsibilities that include fire. He laid emphasis on the fact that prevention and protection are now the front line for the Fire and Rescue Services.

The evidence of this is there for all to see, as over the last 10 years there has been a 35% reduction in domestic fatalities so this approach, in conjunction with the efforts from other fire stakeholders is paying dividends. Brandon threw down 2 challenges to all in the fire sector, namely:

- How can we keep up this reduction in fire fatalities?
- How can competency become the norm for all in the fire sector?

Other speakers at the event addressed the issues highlighted by Brandon. For example, a senior fire engineer commented that competency is required from all involved with fire safety whether their buildings be 'code compliant' or fire engineered. He went on

to say that it should be remembered that however good the fire design of a building, it can be 'undone' by poor construction and maintenance. A discussion ensued as to whether all fire engineering is value engineering as there had been some comments about this earlier on, most of it being anecdotal with no hard evidence.

The competency theme was built upon by a representative from a fire research facility who asked why Building Regulations 7 (materials and workmanship) and 38 (provision of fire safety information to the responsible person) aren't adhered to so that the building is 'safe' and its subsequent occupiers are fully informed of its fire protection systems. To supplement these comments it should be appreciated that Approved Document B (the fire guidance document to the Building Regulations) says:

"Building Control Bodies may accept the certification of the installation or maintenance of products, components, materials or structures as evidence of compliance with the relevant standard. Nonetheless, a Building Control Body will wish to establish, in advance of the work, that any such scheme is adequate for the purpose of the Building Regulations."

Continued on page 133...



Don't gamble with your fire risk assessment!...

If you are responsible for a business premises, the law requires that you have a fire risk assessment. To find competent providers, you need BAFE.

Under the provisions of the Regulatory Reform (Fire Safety) Order 2005, the Duty Holder or Responsible Person for a building is required to make a Fire Risk assessment to clarify the fire precautions necessary to ensure the safety of staff, customers and property.

At present there are no adequate means to ensure the competence and reliability of a company commissioned to carry this out.

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Promoting Quality in Fire Safety

Continued from page 131...

In part this answers Brandon's competency challenge, as if the Materials and initial workmanship are dealt with by certification schemes and then if the appropriate paperwork and associated information are passed on to the responsible person, then they can ensure that the building is kept 'fire safe'. However, Brandon could bring influence to bear by ensuring that only competent people (those that are members of suitable schemes) are used on all buildings or as a minimum on those that employ the use of taxpayers' money.

A National Social Housing Fire Strategy Group representative echoed the previous speaker's views by arguing that there is a real need to sort out Building Regulation 38 and the way that it is implemented and enforced. Indeed, one has to ask the question as to who has heard of Regulation 38 and my bet is that few hands would go up in any room; so if nobody's heard of it then it's a fair bet to say that it's enforcement is likely to be negligible as well. The Fire Sector isn't happy with this state of affairs as information supplied under the auspices of Regulation 38 provides a very good basis for the 'production' of a good fire risk assessment for the building in question. In order to address this situation a working group has been set up to report the Fire Sector Federation's Technical Guidance Workstream. It is expected that this working group will report back later in 2014, so we may be able to discuss more of that in the future.

A thoughtful presentation from the Fire Protection Association posed the question as to why the government won't legislate to protect:

- The most vulnerable in society from fire;
- Those people affected by others over whom they have no control when it comes to fire;
- Very large premises from the ravages of fire which can cause loss of life, property damage and reduced levels of employment.

In particular, the comment concerning the most vulnerable in society would drive down fire deaths in this demographic group. Such legislation would include the provision of the appropriate fire protection systems (fire detection, suppression etc.) at the change of a tenancy. Indeed, past Westminster events have included presentations on the level of fire deaths in rental accommodation, and in particular those properties where there is no working smoke detection. A similar piece of legislation applies in Scotland under the 'Repairing Obligations' so one must ask why the English rental property is not treated in the same way? Hopefully Brandon is now listening as government announced on 20 November 2013 that it would be carrying out a review as to whether new rules are required for carbon monoxide and smoke detectors in private accommodation. This Rented Sector Review closed on 28 March 2014 and the results of this have not yet been issued.

The government's own champion for fire safety in rental accommodation gave a presentation concerning Firemark, which is a training and advice tool for all of those involved with fire safety in rental accommodation. He indicated that when he asked Brandon's predecessor Bob Neill about the implementation of Firemark, he was told 'you don't get it do you, just get on with it'.

Now, that last comment is a pragmatic attitude that could be applied to all of us in the fire sector including the Minister, and only time will tell if he takes note of the answers from the fire sector to the questions that he posed – only time will tell. ■

.....
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Suppressing the fire

An effective sprinkler system can reduce a multitude of costs from fire and here, Steve Mills, BAFSA Fire & Service Co-ordinator provides the evidence...

Since the very first occasion that mankind used fire to cook and keep himself warm the phenomena of fire has been the proverbial 'double edged sword'. Humankind has been able to harness its power to amazing creative effect but has also felt the destructive force and human tragedy that fire has the potential to unleash. To know and feel that destructive element is perhaps everyone's worst nightmare.

It was in response to that fear, witnessed in some very dramatic and tragic fires, and of course the financial benefits of not losing all one's possessions, that some were determined in seeking a way of automatically dousing fire with water. Pioneering work came to a head, if you will excuse the pun, with the development of the world's first automatic fire sprinklers in the 19th century and, though one has to say that the basic premise has remained true, since that time the concept has been continually developed. This has been achieved through thorough testing and design development, mainly aimed at reducing the economic cost of fire. It has been in more recent years that the potential life safety benefits of sprinklers have been portrayed, but has all this work been effective?

There is an array of statistics, produced from a variety of sources to show how effective sprinklers (aka water based fire suppression systems) are, and these can be most useful in discovering the potential benefits sprinklers have in controlling fire. For instance, a quick web search of 'fire sprinkler facts' gave the following result:

- 99% of fires were controlled by sprinklers alone;

- 60% of fires were controlled by the spray from no more than 4 sprinklers;
- In New Zealand, where all fires have had to be reported for over 100 years, records show that sprinklers have been effective in 99.7% of cases.¹

One has to say that these kind of statistics are very powerful but there is also other information which is not so unequivocal. Some of these have been produced in research documents over recent years which, whilst upholding the benefits of sprinklers have shown a more 'cautious' endorsement.

In addition, the information released by the DCLG (Department for Communities and Local Government) in their latest 2011-2012 fire statistics, as gathered from fire and rescue service reporting show that:

In 2010-11 there were 408 fires with the outcome where sprinklers were present in the room of origin. 43 fires were in dwellings and 365 fires were in other buildings. Of these, 172 (42%) were extinguished/contained/controlled, 29 (7%) did not contain/control the fire, and 207 (51%) were not known.

For the purposes of this article I will discount the other DCLG statistical information relating to sprinklers being on the same floor as the fire – not I feel an unreasonable premise – that for any suppression system to be effective, it has to be in the same room as the fire (room of origin).

As can be deduced from the above, it would appear that there are large differentials of how effective sprinklers actually are if we look at statistical evidence

only, especially as many sprinkler activations are believed to go unrecorded. What is perhaps needed is a broader view of the facts.

Seeking practical experience

As one with a fire & rescue service background, I am keen to understand and investigate the practical outworking of how sprinkler systems operate in real fire situations and how best to gather this information, and what information is likely to be of use.

Thanks to a growing network of people who diligently record information where sprinkler activations occur, a broader picture is emerging of their usefulness in controlling fire in a wide variety of building types. Since first collecting such information in 2010 two things have become clear:

- 1) In the incidents reported, sprinklers are shown to be extremely effective in controlling fire size;
- 2) The level of interest shown in sprinkler incidents each year is growing;

2011: 32 incidents reported

2012: 60 incidents reported

2013: 63 incidents reported.

Since the introduction to this country of fire sprinklers into the residential and domestic arena, there have been a number of recorded sprinkler 'saves' in the home environment. However, the majority of recorded incidents appear to occur in commercial and industrial premises and this may be for a variety of reasons possibly relating to insurance claims, resetting of systems being seen as more of a priority for large premises, or a reticence to call the fire and rescue services to a controlled fire situation.

My figures for the past two years show the following breakdown of premise types where sprinkler activations have been notified.

| | 2012 | 2013 |
|----------------------|------|------|
| Factories | 25 | 23 |
| Warehouses | 5 | 3 |
| Retail/Entertainment | 16 | 11 |
| Schools | 2 | 6 |
| Dom/Res | 7 | 11 |
| Hotel | 2 | 2 |
| PPS | 2 | 3 |
| Recycling | | 3 |

For the vast majority of these cases, the outcome has been very successful in terms of the low number of systems that were actually triggered and the amount of fire damage caused to the property concerned. The most notable 'failures' of sprinkler systems occur where the system has been turned off or decommissioned, and at least three commercial incidents have been recorded where this has happened and the building concerned has been totally lost.

Two fires: different outcomes

It is often said that one picture can paint a thousand words and one of the most interesting aspects of the appraisal of sprinkler effectiveness can occur when photographs of incidents turn up from time to time. These really help to put the amount of fire damage into perspective. For instance, it is widely believed that sprinklers are ineffective at controlling kitchen fires, especially those involving burning oil or fat products.

It is generally understood that up to 60% of all household fires occur in the kitchen or are cooking related, so can sprinklers make a difference? Many of the 'domestic' incidents related to me seem to involve such fires and it is surprising to see how effective sprinklers are in such circumstances.



Courtesy of West Midlands Fire service

Below are two fire outcomes, the first following a cooker fire in a HMO in Birmingham.

As you can see from the photograph (above), the fire was intense enough to strip the plaster from the walls and incinerate most of the contents of the room. Fortunately no one was hurt but the roof was lost and several other tenants in the building had to be re-homed. The cost of repairs ran into several thousands of pounds and took several months to undertake, during which time all revenue from tenants was lost.

The second fire occurred in Brighton and this too involved a fat pan fire. The outcome, as can be seen from the photograph (opposite), is completely different, and the contrast stark.

As the fire became hot enough, a single ceiling mounted sprinkler head nearest to the cooker activated (this is normally at about 70°C) and prevented the fire from taking hold. The occupant, a person

known to be vulnerable from fire, was able to stay in her flat following the clean-up operations.

It is at this point worth mentioning that the fire service advice is never to throw water onto a fat pan fire as this is extremely dangerous and will cause the fire to dramatically flare up with potentially life-threatening consequences. This advice remains sound. Never throw water on to a fat pan fire or try to move a flaming pan of oil. While it is true that sprinklers do apply water to the fire, the way they do it, in small droplet form, allows heat to be far more rapidly absorbed and this aids suppression of the fire.

How do sprinklers suppress fire?

Fire spreads by conduction through solid matter, radiation and convection through the gaseous products of combustion. It is a three dimensional effect meaning that a fire can get rapidly out of hand. Sprinklers have been shown to be very effective in controlling fire spread and this is borne out in my data and from fire testing.



“Thanks to a growing network of people who diligently record information where sprinkler activations occur, a broader picture is emerging of their usefulness in controlling fire in a wide variety of building types.”

other countries, especially in the residential and domestic field where sprinkler systems have been in use for a much longer period.

While this article reflects just a snapshot of all the sprinkler activations that are occurring, it does contain a common thread to show that where a correctly designed, installed and maintained sprinkler system is activated by fire, the outcomes show reduced fire damage, increased resilience and reduced costs from fire, improved business continuity and less environmental damage.

I leave you to draw your own conclusions. ■

¹ Fire Sprinkler Information and Discussion Forum

British Automatic Fire Sprinkler Association
bafsa

.....
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Firstly the water from the sprinkler head(s) introduces cooling/wetting to the fire area. This helps to control all three types of fire spread.

Fire gases are rapidly cooled and this is effective in preventing ‘flashover’, where flame propagation in the room is uncontrolled and everything is consumed by fire.

In addition, as water from the sprinkler wets the items surrounding the fire, this makes it more difficult for radiation to set fire to nearby objects such as furniture.

There is also strong evidence to suggest that as the water droplets pass through the fire gases, a certain amount of ‘scrubbing’ takes place, reducing the toxicity of the products of combustion.

What is the conclusion?

Evidence from sprinklers activated in fires within the United Kingdom is beginning to match that from

Fire performance of timber stairs

New guidance from NHBC provides builders, designers and regulators with possible solutions for stairs in residential buildings where building regulations calls for them to be constructed from materials of limited combustibility...

Approved Document B (Volume 2 clause 5.19) recommends that in residential buildings over three storeys with a single escape stair, the stair should be constructed out of materials of limited combustibility.

This is considered necessary for the following reasons:

- The stair is the only means of escape for residents on the upper floors;
- The risk to the stair as a consequence of an arson attack within the stairwell is significantly greater if the stair is made from a combustible material.

However, research into the use of timber stairs was undertaken by BRE as part of the Timber Frame 2000 project, culminating with the 2009 publication of Report BD2569 – Fire Performance of Timber Stairs. One of the conclusions of this research was that fire retardant timber treatment could be used, both impregnated and surface applied, to lessen the charring caused in a fire situation and therefore provided evidence that timber can perform satisfactorily in a fire situation under certain circumstances.

The guidance from NHBC can therefore be followed if the design or particular method of construction lends itself more easily to the use of timber stairs rather than a stair constructed out of concrete or steel perhaps. The guidance is applicable to residential buildings of all types of building construction not exceeding six storeys or with a top floor less than 18m above ground level.

Both Approved Document B Volume 2 and BS9991

have several references to the need to ensure a robust, fire resisting enclosure to a stairwell, to restrict the use and fire load of the stairwell and rooms accessed directly off it, and to provide vents to remove heat and smoke. The need for the stair itself to remain largely non-combustible is considered to be an integral part of this.

There are three ways to satisfy the requirements of Part B in respect of staircases in single stair residential buildings exceeding three storeys:

1. The stair should comply with the limited combustibility recommendations of AD B Table A7. Softwoods and MDF are unable to achieve this standard and cannot therefore be accepted as materials of limited combustibility;
2. Using a timber stair from a manufacturer who has obtained a suitable, independent third party approval from a UKAS accredited test house (e.g. the BWF/LPCB approval scheme for fire protected common stairs – www.bwfstairscheme.org.uk). The builder must provide evidence to the building control body that the proposed stair construction does not deviate outside the parameters of the third party approval;
3. Where it is not possible or desirable to follow the first two options, it would be possible to use a conventional timber stair where the builder can demonstrate that the following precautions are incorporated into the specification, design, and installation of the stairs. These precautions are suitable for both straight and dog-leg timber staircases:

- The building should not exceed six storeys with the top floor <18m above ground level;
- Stairs should be constructed using thermosetting type glue (e.g. Cascamite);
- Stair construction should replicate that of the fire tested stairs from BD 2569, as follows:

- Softwoods stairs should be –

- at least of C24 strength
- a minimum density of 470kg/m³
- treads should be a minimum of 44mm thick and risers should be a minimum of 14mm thick

- MDF Stairs should be –

- a minimum density of 720kg/m³
- treads should be a minimum of 44mm thick and risers should be a minimum 12mm thick

- The timber should be treated to upgrade its reaction to fire. Treatments can either be factory or site applied:

- Factory impregnated products should be independently certified by a UKAS accredited test house to raise the spread of flame to a Class 0 standard or a Euro-classification of B when tested in accordance with BS EN 13501-1. Information to certify the performance and application of the treatment should be provided to the Building Control Body;

- Site applied surface treatment should be independently certified by a UKAS accredited test house to raise the spread of flame to a Class 0 standard or should hold independent third party test certification which demonstrates

that a Euro-classification of B is achieved for the required timber thicknesses when tested in accordance with BS EN 13501-1: 2007. The treatment must be applied by a contractor approved by the manufacturer, and must be applied to the top, sides and undersides of the treads and risers, as well as to all exposed surfaces of the strings, balusters and handrail;

- Stairs should be underlined with a single layer of fire board providing a minimum of 30 minutes fire resistance, limiting the additional loading to the stair and ensuring that good fixity and integrity of the board is achieved.

Regulatory Reform (Fire Safety) Order 2005

Where a timber staircase is used in single stair residential buildings exceeding three storeys, the builder must ensure that information on the assessment, lifespan and retreatment of the timber stair is passed to the responsible person as part of the information provided under Regulation 38. This is to ensure that on-going maintenance can be included as part of the end user's fire risk assessment. Confirmation should be given to the Building Control Body that this information has been passed to the responsible person. ■

Full copies of the guidance can be downloaded from the NHBC Techzone at www.nhbc.co.uk/techzone



.....
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CDM Regulations 2015: Better safety for all?

The revised CDM proposals have been debated and analysed by many in the industry. Here, James Ritchie, Head of Corporate Affairs at The Association for Project Safety examines the revisions in addition to what they should mean for the smaller contractor...

Throughout the months of April and May the Health and Safety Executive (HSE) have been running their consultation process on proposals to revise the Construction (Design & Management) Regulations 2007. This is the third iteration of these regulations since they were introduced in 1995.

During that time, the fatal injuries rate in construction have dropped from 105 in 2000/01 to 39 in 2013/14 and more importantly the Fatal Injury Rate for construction workers has dropped from 6.0 per 100,000 to 1.9 per 100,000 over the same period. Since the introduction of CDM 2007, the UK has become a global leader in construction health and safety with UK construction companies working across the globe and taking CDM 2007 procedures with them. So you might be forgiven for wondering why the HSE are making wholesale changes to the regulations.

The HSE have set six policy objectives for the CDM 2015 proposals:

- Maintain or improve worker protection;
- Simplify the regulatory package;
- Improve health and safety standards on small construction sites;
- Implement the Temporary or Mobile Construction Sites Directive (TMCSA) in a proportionate way;
- Discourage bureaucracy; and
- Meet better regulation principles.

These objectives are all admirable and I would have thought that everyone within construction would agree with them. Irrespective of the final format of the revised CDM Regulations, due to come into force in April 2015, certain issues are known:

- The Regulatory package will be much simpler in format than the current regulations;
- The onus will be on dutyholders to comply with the regulations through implicit rather than explicit requirements;
- Reliance on guidance documentation will be much greater than currently;
- SME Contractors will have to get their act together with regard to CDM as they will have much greater responsibilities, including taking on client duties if they are working on a domestic project;
- There will no longer be an independent CDM Coordinator to provide clients, and others, with advice and assistance regarding construction health and safety;
- In many cases the first designer appointed will have to take on the health and safety coordination role currently dealt with by the CDM Coordinator;
- Health and Safety coordinators must be appointed for any construction project that will have more than one contractor working on site;
- Contractors will self assess the contents and suitability of their Construction Phase Plans.



The HSE seem to have been caught between a rock and a hard place. They are looking to improve on the current CDM 2007 Regulations but have to meet Government requirements to reduce the regulations down to the absolute minimum. We also know that the UK Government has to change the regulations to meet the European Temporary or Mobile Construction Sites Directive (let's just call it the TMCSD) otherwise they could face an embarrassing prosecution. If the issue was just meeting the TMCSD to ensure the UK did not face prosecution, then changes could be easily made without incurring the likely disruption and cost that the HSE's proposals look to bring to the industry.

The CDM 2007 Regulations, when implemented correctly and proportionately, have been proved to

bring considerable benefits to the construction industry and construction clients. The problem has been the abject failure by a proportion of the construction industry to understand and implement the regulations correctly, and this has not been helped by what some see as the failure of the HSE to encourage, cajole and enforce compliance – particularly with regard to the early appointment of the CDM Coordinator – at the smaller end of the market.

We currently have a two-tier industry in terms of health and safety and, whilst the large contractors and project teams are taking construction health and safety seriously and reaping the consequential rewards in terms of reduced accidents, ill health and better profit margins, the smaller and domestic

sectors of the industry still have not caught on to taking health and safety seriously. Many people still do not realise that CDM applies to all projects, thinking that it only applies to projects likely to last longer than 30 days.

The HSE have written the proposed new CDM Regulations specifically to address the problems with poor health and safety on smaller construction sites and even if the industry has no choice but to accept that the CDM Regulations are going to be re-written, the HSE should be applauded for attempting to tackle these problem areas. One can't help but think that it is more a culture change that is required rather than a regulatory one – a culture change amongst designers generally and SME contractors in particular – and the domestic construction sector is going to get a real shake-up with health and safety coordinators required on all projects where there is more than one contractor working.

The HSE's consultation process that ran from 31st March through to 6th June 2014 generated a lot of discussion in the industry and the main areas of concern seemed to be:

- The perceived watering down of health and safety standards leading to a possible reduction in worker protection;
- The over-simplification of the regulations raising concerns that some sectors of the industry will take advantage of the lack of clarity;
- The likely increase in bureaucracy with the introduction of a requirement for coordinators and principal contractors on many more smaller projects;
- Worries about the way responsibility for discharge of domestic client duties are being thrust upon contractors;

- The placing of health and safety coordination duties upon designers who might not want to do this;
- The loss of an independent health and safety adviser for clients and design teams – something seemingly valued by clients and designers;
- That the proposed revisions appear to be driven primarily by government 'better regulation' cost reduction policies rather than a need to make a significant improvement in construction health and safety.

Whatever the outcome the construction industry will have to make the CDM 2015 Regulations work, and work better than CDM 2007, particularly at the smaller end of the industry. This will require everyone in construction to be fully aware of what their responsibilities are, and be prepared to work as integrated teams to eliminate, reduce, inform and control risks on construction projects. ■

You can find out more about the proposed CDM2015 regulations at www.aps.org.uk/cdm2015.



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- Q.** Are you sure that you understand the duties and requirements of CDM2007 and/or other health and safety requirements?
- Q.** Have you amended your policies and procedures to reflect the current legislation and practices?
- Q.** Are your employees competent to perform their duties?
- Q.** Do you select competent organisations to work with you?
- Q.** Do you manage your organisation and projects without copious amounts of paper?

If the answer to any of the above questions is **no**, you need to consider training and advice to achieve legal compliance and develop best practices.

Contact the experts

David Carr PgD, FIIRSM, DipSM, RFaPS, Managing Director

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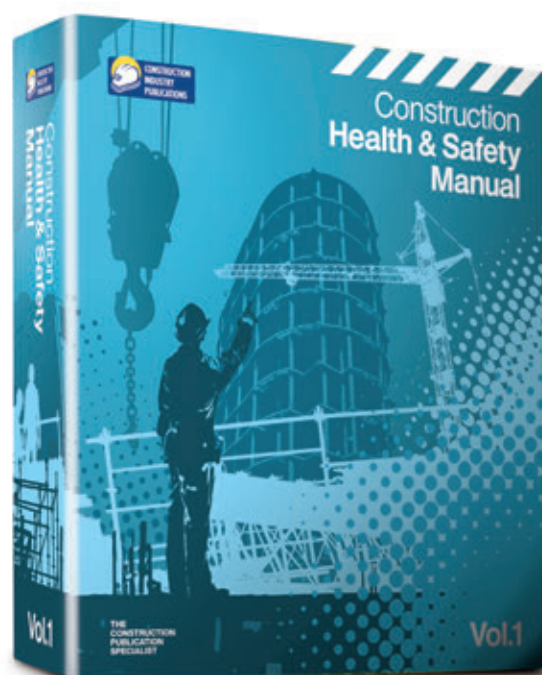
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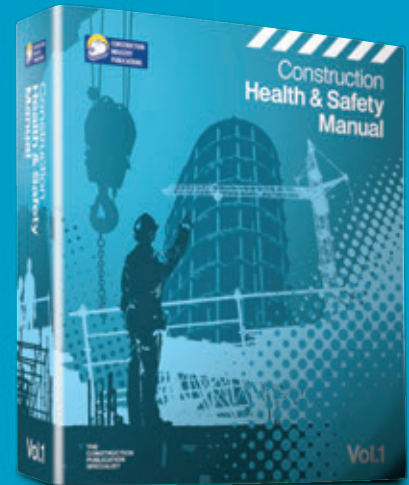
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The CDM 2007 revision: An industry reaction

Following on from the HSE's CDM 2007 consultation, Olswang LLP have submitted an umbrella response to the proposed changes. Here, Senior Associate Alexandra Lavery outlines the concerns raised by their respondents...

The Health and Safety Executive (HSE) is required to regularly review the effectiveness of the Construction (Design and Management) Regulations 2007 (CDM Regulations). It launched a consultation on replacing the CDM Regulations and its associated Approved Code of Practice (ACoP). The aim is that revised regulations will come into force in April 2015, shortly before the next General Election. Mindful of the fact that the revised regulations envisage more significant changes to the current regime than many appear to realise, Olswang submitted an umbrella response to the consultation which incorporated feedback from our clients, including developers, contractors and designers.

The HSE states that its goals are to simplify the CDM Regulations, improve worker protection, improve health and safety on small sites; and discourage bureaucracy. The new regulations:

- Have a simplified structure;
- Replace the ACoP with targeted guidance;
- Replace the CDM Co-ordinator with a "principal designer" (PD);
- Require a Principal Contractor (PC) and a PD to be appointed for all projects where there is more than one contractor;
- Remove the requirement for clients to appoint "competent" individuals, and replace that with a more general obligation on clients to ensure that individuals on site have sufficient information and supervision to work safely;
- Extend the regulations to homeowners.

Implications for you

Although the simplification of the CDM Regulations is greatly welcomed, both Olswang and the majority of our respondents had concerns regarding replacing the ACoP with "targeted guidance". The ACoP is often criticised as too lengthy and inaccessible, however, our responses generally find that the ACoP contains useful guidance on interpretation and application, and on the whole find that it has helped reduce bureaucracy. The ACoP was produced by the HSE, which has a vested interest in ensuring that it is sufficiently comprehensive and practical. Although the HSE intends to produce the guidance working with industry, there were significant concerns that if it is overly simplified the benefits described could be lost.

The PD will have greater control and influence over design than the CDM Co-ordinator. It will be responsible for planning, managing and monitoring pre-construction, and those obligations will pass to the Principal Contractor upon the commencement of construction. The aim is to integrate the approach to risk management and the HSE cites feedback that the CDM Co-ordinator often operates on the fringes of the construction team. The new default position is that the PD will be appointed from the existing project team (rather than be a standalone consultant), which should help achieve this aim. This is a major change as, in our experience, it is common for project teams, particularly on more modest construction projects, to have a standalone CDM-Coordinator. The HSE hopes that the introduction of the new default position will result in less standalone appointments.

Our respondents echoed our unease in bringing the role into the existing design team. In fact, they were much more positive about the CDM Co-ordinator's



role, and disagreed with the HSE's assertion that the role is often ineffective. They questioned whether there is evidence to suggest that a designer will be best placed to fulfil the roles, and argued that the separate role has brought useful objectivity to projects. In fact, many CDM Co-ordinators are not designers. Will the changes lead to CDM professionals being more inclined to join design consultancies? There were some concerns that health and safety specialists could receive less attention with this approach. Our responses were also circumspect about the anticipated cost savings as many had concerns that a default appointment of the PD from the existing design team could lead to expectations that the role is performed within the agreed design fee.

The extension of the CDM Regulations to homeowners is also a significant change. Presently the CDM Regulations only apply where the person or company

carrying out the development is doing so as part of a business. The domestic restriction will be removed – therefore all the obligations which fall to commercial clients would now also apply to homeowners. The HSE hopes that extending the CDM Regulations to homeowners will be proportionate as there is a default position where the domestic client's duties fall to the contractor (or to the PC where there is more than one contractor). The requirement to take compliance action is therefore likely to be felt by contractors in the domestic sector rather than by the homeowners. The extension to homeowners will likely increase their construction costs but this should, of course, lead to safer worksites. For the new regulations to receive a smooth introduction for domestic construction works may, as I mention above, depend on the quality of the targeted guidance. There is some logic to this widening in Olswang's view. We are aware that, anecdotally, in the years following the enactment of the CDM Regulations,

larger construction sites have become proportionately safer and it is the smaller projects, where the limited number of HSE inspectors is most evident, where the higher proportion of accidents accrues.

“Although the simplification of the CDM Regulations is greatly welcomed, both Olswang and the majority of our respondents had concerns regarding replacing the ACoP with “targeted guidance”.”

Clients will also be required to appoint a PC and a PD where there is more than one contractor appointed on the project. This is a change to the current requirement that a PC and PD are appointed if the project is to last at least 30 working days, or the equivalent of 500 person days (i.e. 50 people each working at least 10 days). Presently, where two or more employers share a workplace they are obliged to co-operate so far as necessary to comply with the Management of Health and Safety at Work Regulations 1999. The HSE hopes that as employers are already subject to this co-operation requirement, the additional duties imposed on a PC and a PD will not seem like too much of an additional burden. The HSE is aiming for a proportionate approach to compliance on smaller projects and will provide guidance on this. Again, the transition will depend on the quality of the guidance, especially for contractors previously unaccustomed to the CDM Regulations. The approach seems likely to increase the inspection burden on the HSE.

The removal of the competence requirements in Regulation 4 (where the client is obliged to appoint “competent” individuals) aims to respond to past criticisms of perceived bureaucracy, and the HSE cites industry concerns about the balance between the benefits and costs of compliance. The HSE views the increase in third party schemes which offer an objective assessment of “competence” as costly and bureaucratic for contractors. The HSE proposes a

more general set of requirements in the new regulations. Clients will broadly have to ensure that those they have appointed have received appropriate information, instruction, training and supervision to allow them to work safely.

The new requirements are of a general nature, with the intention being to work with industry through non-regulatory approaches to promote cultural change and leadership. The idea is a clean break from the competence requirements by completely removing Regulation 4. Overall, this change looks to benefit contractors and clients alike in cutting down on pre-qualification costs and bureaucracy in the supply chain. In Olswang’s opinion, this rethinking by the HSE is pragmatic. While experienced developers were mostly comfortable with Regulation 4, it often left newcomers more bewildered. However there are concerns about the burden this will place on clients. Many of our responses saw the quality of the guidance as crucial to the success of this proposal, and felt the transition would benefit from a handover period. ■

If you would like to receive a copy of Olswang’s response to the HSE’s consultation, please email constructionevents@olswang.com.

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The acoustic design of schools – a revised BB93

Following the consultation regarding the new acoustic design of schools – BB93, Andrew Parkin, Acoustics Partner at Cundall, and Chair of Association of Noise Consultants (ANC), summarises the responses and challenges that still remain...

I wrote in 2013 about the impending changes to BB93, the document that is the means of compliance with Part E4 of Building Regulations – Acoustic design of schools ¹.

After a long protracted ministerial process, the document was finally issued for consultation in February 2014. This document was essentially the Priority Schools Building Programme (PSBP) output specification for acoustics, v1.7 dated June 2013, itself an update of the September 2012 (v1.1) document. By the time of consultation therefore, content had been used to design PF2 schools around the UK and was familiar to school design practitioners.

Not surprisingly, the consultation yielded a large number of responses, 61 in total (compared with 48 for the original BB93 in 2002).

With all the consultation responses back, the process of assessing these is well underway at the time of writing (and should be complete by the time of going live). There were very few new issues raised that had not already been discussed during the past five years. However, there were a number of common issues that have caused the committee to re-visit some decisions that had previously been made.

The two most hotly contested issues were sound insulation and ventilation; both are discussed briefly below.

BB93 brought a new descriptor for sound insulation in $D_{nT}(T_{mf,max})_w$. Whilst this may sound complicated (and indeed it is difficult to say), it is actually quite simple. $D_{nT,w}$ has been used in Approved Document E for many years and the BB93 version is simply a

variant of this. $D_{nT,w}$ is defined as the 'weighted standardised level difference' and is a method to describe the sound insulation across an element (e.g. wall or floor) in frequency bands as a single number value. Part of the calculation process involves correcting sound insulation for the amount of reverberation in the receiving room and normalising to a standardised value of 0.5 seconds. What this means in practice is that a test could be carried out in an unfurnished, echoey room but still be compared against the equivalent sound insulation in a furnished space. The BB93 variant simply takes the reference reverberation time and replaces it with the design value for the particular room in a school (e.g. 0.6 and 0.8 seconds for primary and secondary classrooms respectively). The issues with the BB93 version came when actual reverberation times in-situ were less than the design maximum (which is a good thing), but the corresponding sound insulation value was unfairly penalised, sometimes resulting in marginal failures even though the sound insulation was actually fine. So, the committee agreed (by consensus) to use a normalised value to 0.5 s, for simplicity but also to reduce inaccuracies in site measurement. There was significant reaction to this in the consultation which has reopened the old can of worms and discussions relating to the use of D_w (a variant of $D_{nT,w}$ but without any correction for reverberation time) is now being discussed for site measurements.

BB93 was published in 2003, two years before BB101 (indoor air quality, including ventilation). Due to this disconnect there was not a single place that contained both acoustic and ventilation guidance. The plan was to rectify this in the BB93 replacement and therefore, significant detail regarding the ventilation conditions to be assumed in noise break-in calculations was provided. In the first (v1.1) PSBP document this included a 'deemed to satisfy' method for determining whether opening windows could be used for ventilation, based on the difference between external and internal noise levels required (with separate values for single- and double-sided ventilation); this was found to be overly restrictive in

practice and a 'mid-season' condition was assumed for v1.7. The problem is that there is very little evidence to show what attenuation a window that is open for 'mid-season conditions' gives; the matter is not helped by the fact that the type, size, number and hinge position of the windows all have a bearing on the calculation. A significant number of consultation responses therefore called for a simplified method, which has prompted the committee to discuss various alternative options. The problem is that there are so many variables, and expressing both acoustic and ventilation requirements in a simple elegant method is in itself a very complex process.

So, thanks to everyone that responded to the consultation. There will never be unilateral agreement on all the issues and it is left to the committee to find a consensus view, using their expertise and experience, assisted by consultation comments.

DfE are keen to publish the completed document in the summer so the pressure is on to reach agreement on these, as well as many other points. ■

¹ <http://www.adjacentgovernment.co.uk/pbc-edition-001/sounding-out-good-school-design/>

.....
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Impact of DfE acoustic standards

Emma Greenland (PhD, BEng, MIOA) WSP

Emma has regularly advised DfE throughout the last 5 years and has been a major contributor to the new DfE document on behalf of both the Institute of Acoustics and Association of Noise Consultants. For practical and clear independent acoustics advice contact emma.greenland@wspgroup.com. WSP is a member of the ANC.

The new standards are a welcome update to BB93, recognising a remarkable modernisation in school design over the last 12 years. Acoustic conditions profoundly affect teaching and learning, from academic performance, to behaviour, concentration, and staff health.

The standards will reduce derogation by recognising commonplace exceptions as a result of other design constraints. Designs will become more consistent and responsible following a cap on allowable alternative performance standards (APS).

APS Checklist for BCOs (don't Derogate, Interrogate!)

- ✓ Don't accept 'derogations' for acoustics, always request a full and proper APS schedule.
- ✓ Ensure every proposed APS is expounded and justified by educational, environmental or health and safety reasons.
- ✓ Check each proposed APS does not exceed the maximum allowable standard set out in the new document.

- ✓ Where the proposed APS falls outside the maximum allowable APS, always seek independent acoustic advice from a technical advisor.
- ✓ If you don't understand or comprehend the proposed APS technically, demand a simpler explanation from the acoustician describing impact of the APS and management strategies required to deal with the impact.

Refurbishment and Change of use

Less onerous performance standards have been introduced for refurbishments and material change of use, which are major features of the UK's current school building programme not specifically addressed under BB93. These recognise the practical difficulties of achieving acoustics performance with existing building fabric. Whilst refurbishments fall outside Building Control's remit (School Premises Regulations compliance only), the new standards are applicable to Building Regulations for conversions where the original building was previously used for non-educational purposes.

Open plan classrooms

Speech intelligibility performance has been transferred from Building Control remit, to the Client Body's responsibility (under School Premises Regulations, SPR). Whilst the current lack of formal procedure to enforce SPR is a concern, Client Bodies and design teams will welcome the new practical design guidance and management strategy advice included in the forthcoming IoA/ANC Guidance document.

Summary of Major changes

- New standards for refurbishment/change of use
- Simplified 'deemed to satisfy' ventilation strategy assessment will improve consistency in assessment methods and increase the viability of naturally ventilated classrooms.
- Simplified airborne sound insulation parameters and performance matrix
- Less onerous reverberation times in Sports Halls with simpler deemed to satisfy calculative method, with sound absorption applied to both ceiling and walls.
- Improved reverberation times for SEN rooms, including control at low frequencies
- Open plan speech intelligibility removed from Building Control Remit



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The height of roof safety

Paul Haxell, Chair of the Institution of Occupational Safety and Health (IOSH) Construction Group outlines the risks of working at height and what mitigation steps should be taken...

There continues to be a high level of fatalities caused by falls within the construction industry, according to the latest Health and Safety Executive (HSE) statistics.

Some 59% of construction fatalities – 23 deaths – were caused by falls in 2012/13. Over the same period, 28% of reported major injuries and a further 12% reported over a 7-day absence are caused by falls from height. In total, some 920 injuries in construction were caused by falls.

The law, Work at Heights Regulation 2005, requires that employees and the self-employed undertake a risk assessment for all work at heights. The risk assessment should then inform the development of a safe working method which is planned, communicated to employers and implemented in the workplace.

A specific hierarchy of controls exists to mitigate the risks of working at height. In priority order, the following are to be applied:

- Avoid work at height where it is reasonably practicable to do so.
- Where work at height cannot be avoided, prevent falls using either an existing place of work that is already safe, or the right type of equipment.
- Minimise the distance and consequences of a fall, by using the right type of equipment where risks cannot be eliminated.

Around 1 in 5 deaths in construction involve roof work. Some of those killed are specialist roofers whilst others are involved in routine maintenance, like gutter cleaning and minor repairs.

Of those deaths and major injuries caused by roofing, falls from the roof through openings, off edges or through fragile surfaces are the main causes.

Many of these accidents would have been prevented through the use of suitable equipment and if those doing the work had been given adequate information, instruction and training.

Safe access to a roof requires careful planning, particularly where work progresses along the roof.

Typical methods to access roofs are:

- General access scaffolds;
- Stair towers;
- Fixed or mobile scaffold towers;
- Mobile access equipment;
- Ladders; and
- Roof access hatches.

Falls from roof edges occur on both commercial and domestic projects and on new build and refurbishment jobs. Many deaths occur each year



involving smaller building operatives working on the roof of domestic dwellings.

Sloping roofs require scaffolding to prevent people or materials falling from the edge. You must also fit edge protection to the eaves of any roof and on terraced properties to the rear, as well as the front. Where work is of short duration, (tasks measured in minutes), properly secured ladders to access the roof and proper roof ladders may be used.

“Around 1 in 5 deaths in construction involve roof work. Some of those killed are specialist roofers whilst others are involved in routine maintenance, like gutter cleaning and minor repairs.”

Falls from flat roof edges can be prevented by simple edge protection arrangements – a secure double guardrail and toe board around the edge.

All roofs should be treated as fragile until a competent person has confirmed they are not. Do not trust any sheeted roof, whatever the material, to bear the weight of a person. This includes the roof ridge and purlins.

Fragile roof lights are a particular hazard. Some are difficult to see in certain light conditions and others may be hidden by paint. ■

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The safe approach for mobile elevating work platforms

Operating safely when working at height is a dangerous occupation, but with good management and training, working on mobile elevating work platforms (MEWPs) can be safe says Berlinda Nadarajan of IPAF...

Work at height is by nature a dangerous thing. Falls from height are the largest cause of fatal accidents at work both in the UK and worldwide. In the reporting year 2012/2013, there were 46 (31%) fatal falls in the work place in the UK, according to statistics from the Health & Safety Executive (HSE). Falls accounted for 23 or 50% of fatal injuries in construction. But work at height need not be dangerous or deadly. Most falls occur when people use inappropriate equipment or methods to work at height.

Mobile elevating work platforms (MEWPs) are acknowledged as one of the safest means of performing temporary work at height, for example, in various HSE guidance such as "Health and safety in roof work" (HSG33), "Fragile roofs: Safe working practices" (GEIS5), and "Joint problem solving – working at height up to 4.5m" (worker engagement case study 13).

In the case study research commissioned by Crown House Technologies (CHT), part of the Laing O'Rourke Group in the UK, they found MEWPs to be safer and more effective compared with other methods for work at height, even for low-level access. The findings were the result of a complete review of the work at height procedures (up to 4.5 metres) for mechanical and electrical installation carried out by Crown House Technologies in 2008.

Falls from height are the primary cause of serious injury in the construction industry. CHT's detailed review found that just under a fifth of all accidents on site are related to access equipment. A small proportion of these are caused by MEWPs (19%), compared with podiums, mobile towers, ladders and A-frames.

CHT also undertook a series of time and motion studies using different types of access equipment on

2 different projects. The aim was to understand how long typical tasks took with the variety of equipment that had been used in the past. The results showed that working with small MEWPs was significantly safer than using either podiums or mobile aluminium scaffold towers. Furthermore, MEWPs were found to be 3 times more efficient to use than mobile towers and podiums during these tests.

The IPAF European Powered Access Rental Market Report 2014 (www.ipaf.org/reports) reveals that there are 51,726 MEWPs in the UK rental fleet, with average utilisation estimated at 65%. This figure means that there are 33,622 MEWPs on hire every working day, with 50 weeks per year and a 5-day week, and approximately 8.4 million days of MEWP use annually in the UK.

The vast majority of people using MEWPs have a good experience and work safely at height – completing high-risk tasks, working from a MEWP, safely and efficiently. The HSE believes, as explained by inspectors Joy Jones and Justine Lee in various industry talks, that MEWPs provide a safe and efficient solution to many work at height tasks, but that MEWPs do also introduce other hazards that need to be managed through the risk assessment process.

IPAF's accident reporting project (www.ipaf.org/accident) shows that fatal accidents involving MEWPs are a rare occurrence, but when an incident does occur, there are some common causes that can be traced back to the key duty holders: ranging from planners, managers and supervisors, to operators and ground/rescue personnel.

What can site managers do to minimise risk? The most important thing is to review management and operator training procedures, and to ensure that safety systems are in place. Do a job-specific risk assessment before starting work. Identify hazards, minimise or eliminate the risks and select the right equipment for the job. Have in place a policy for access equipment use and training.

Ensure that users of boom-type platforms wear a full body harness with a short restraint lanyard attached

to a suitable anchor point. This saves them from being catapulted out of the platform in the event of the unexpected. Operators who use any machine that differs significantly to that on which they were trained should receive a familiarisation to cover the differences. Ensure that all access equipment used to lift people is thoroughly examined by a competent person every six months.

These are just some points to help managers work safer, and all feature in IPAF's MEWPs for Managers course, produced together with the HSE. The 1 day course provides candidates with the basic information every manager should know about planning, selecting and preparing for the use of MEWPs on site, from paperwork to logistics. This includes regulations, recognition and avoidance of hazards, risk assessment, and looking at the various types of MEWPs available and what they are best suited for. Details are at www.ipaf.org/m4m

Work at height is high risk, but that risk is manageable, and MEWPs provide a safe and efficient option millions of times every year. But safe operation needs good management, planning and risk assessment, and properly trained and familiarised operators and rescue personnel. Safety and training resources to assist managers and operators are available at www.ipaf.org ■



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Asbestos in schools: time for better management?

The latest Health and Safety Executive advice is that schools should identify, protect and manage asbestos-containing materials. Planning and Building Control Today assesses the current thinking...

In 2013, the Committee on Carcinogenicity (CoC) confirmed that children are more vulnerable to asbestos exposure than adults, as they have a longer time for an asbestos disease to develop. Figures suggest that the lifetime risk of developing mesothelioma for a 5 year old child is about 5 times greater than an adult aged 30.

In light of the findings from the CoC, the Department for Education (DfE) pledged to review its policy by launching the consultation: Asbestos management in schools: DfE policy review.

The consultation sought to hear from those involved in the day-to-day management of asbestos in schools about how effective current guidance is, how asbestos is being managed, what the barriers are to effective management, and how it can better support schools.

Around 75% of UK state schools contain asbestos and more than 140 school teachers have died from the asbestos cancer mesothelioma in the past 10 years.

Campaigners such as the Joint Union Asbestos Committee (JUAC) have been calling for a full audit of the schools estate to establish the condition of asbestos-containing materials. They also want to see a programme to remove completely all asbestos. As Julie Winn, Chair of JUAC said in the April edition of Planning and Building Control Today:

“The only long-term solution to preventing exposure to asbestos in schools is a strategic national plan for the phased removal of asbestos with priority being given to the most dangerous asbestos. Other

countries have recognised the problem of asbestos in public buildings and have committed to a long term policy of phased removal. We believe that a phased removal of asbestos from schools should be adopted as national policy in the UK and if this action is not taken, then asbestos will remain a problem in schools indefinitely.”

Current government policy however, based on Health and Safety Executive (HSE) advice is that schools should identify, protect and manage asbestos-containing materials (ACMs), rather than remove them (the findings are outlined below). It is thought that the cost alone of removing all asbestos from schools prevents the government from taking action.

Speaking at the time of the CoC’s finding last year, chair of the Asbestos in Schools campaign group Annette Brooke MP, said:

“The Department for Education must publish a strategic plan involving an audit of school buildings and an assessment of the risks. Over a period of time the plan must aim for the removal of the most dangerous asbestos materials.”

As we finalise this issue of Planning and Building Control Today, the DfE are yet to publish the results of the consultation, however, in June, the Health and Safety Executive (HSE) announced their results of asbestos management in schools inspections which took place between April 2013 and January 2014. The randomly selected sample of 153 non-local authority schools also included independent, voluntary aided and foundation schools, free schools and academies.

The aim of the initiative was to assess the level of compliance with The Control of Asbestos Regulations 2012 (CAR) which places duties on those who have responsibilities for the maintenance of work premises, including schools, to manage the risk from asbestos.

Overall, the HSE found the duty holders’ awareness of their legal responsibilities was 9% higher than the level found in the 2010/11 inspection programme, with 95% of schools having a full or broad understanding of the requirements.

The majority of schools that were inspected (71%) required either no further action or were given straightforward advice. However, 44 schools (29%) received written advice, with enforcement action taken in 20 of these schools (13%) – an Improvement Notice was served on each of these 20 schools. In 2010/11, HSE served 41 Improvement Notices on 28 schools (17% of the schools visited).

Geoff Cox, the Head of HSE’s Public Services Sector, said:

“Over the last few years there has been a lot of work by stakeholders across the school sector to raise awareness of the duty to manage asbestos. It is really encouraging to see that awareness of the requirements has increased since our previous inspection initiative.

“That said, schools should not be under any illusion – managing asbestos requires ongoing attention. Schools now have access to a wealth of guidance setting out clear and straightforward steps to achieve and maintain compliance.

“Where duty holders fall below acceptable standards, HSE has taken, and will continue to take, enforcement action”

Key findings

The results of these inspections should make clear to schools that managing asbestos requires ongoing attention.

The HSE say that schools should focus particular attention on the following issues:

Schools should make sure that their records are up to date. The management survey is an essential part of these records – its purpose is to locate ACMs that could be damaged or disturbed by normal activities, by foreseeable maintenance, or when installing new equipment.

Schools must have an asbestos management plan. Where the status of a school changes from local authority control, the management team needs to be fully conversant with the plan and should satisfy itself that local knowledge has been incorporated.

Schools must ensure that in-house operatives undertaking building and maintenance work have received adequate asbestos training. Equally, dutyholders should ensure that they only use contractors that are trained to a sufficient standard.

Schools must have a system to inform anyone who may disturb ACMs of the presence of asbestos. Methods commonly used include permit-to-work systems, labelling ACMs clearly, and providing a plan with the locations of all ACMs marked on it.

The HSE results clearly leave the emphasis on the requirements for managing asbestos in line with compliance with CAR. I am sure I’m not alone in eagerly awaiting the outcome of the DfE consultation which may yet pave the way for a strategic national plan for the phased removal of asbestos. ■

A full list of schools inspected by the HSE and the results of the inspection is available online at: <http://www.hse.gov.uk/services/education/asbestos-management-1314.htm>

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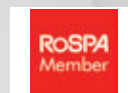
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Respiratory protective equipment: prevention when there's no cure

Raising awareness of using respiratory protective equipment correctly to minimise exposure to dangers such as asbestos is vital says Terry Slater, Director of SMH Training & Scientific Services UK LTD...

A number of high profile campaigns – including 'Clean air? Take care!' (British Safety Industry Federation (BSIF)) and 'Take 5 and Stay Alive' (British Lung Foundation) – have raised awareness about the importance of appropriate respiratory protective equipment (RPE) for the estimated 5.5 million workers exposed each year to hazardous gases, vapours, and airborne particles, including fibres such as asbestos.

The health problems associated with breathing in hazardous substances – cancers, asthma, COPD, allergies and sensitisation, silicosis – can be slow to manifest, but are often debilitating and even fatal. There are currently approximately 12,000 deaths each year due to occupational respiratory diseases. Perhaps less serious, but equally shocking, is the statistic that in a single year, 667,000 working days were lost due to work-related breathing or lung problems.

Employers are legally responsible for selecting the right RPE for their workers, and the Health and Safety Executive (HSE) will take enforcement action – including prosecution – where it finds this isn't happening. However, simply providing the correct RPE is not enough – a worker provided with the correct equipment will still be risking respiratory health problems if it is ill-fitting or leaks.

Fit to face fit?

Any tight-fitting RPE (i.e. full face masks, half masks, or filtering facepieces/disposable masks) should be

fit tested as part of the selection process, and because workers come in all shapes and sizes, this means that individual face fits need to be done for each wearer. There are 2 main methods of fit testing face masks:

- A quantitative or ambient particle count test using a Portacount or similar device. This is a fast, reliable and objective way to fit test because the device measures the fit factor;
- A qualitative or taste test. This is an economical alternative to quantitative testing which works by spraying a sweet or bitter solution into a hood and relies on the mask wearer acknowledging when they have detected the taste.

A requirement of face fit testing is that the fit tester should be competent. Working closely with the HSE and other industry stakeholders, the BSIF developed the Fit2Fit Fit Test Providers Accreditation Scheme. It aims to provide evidence about the competency of any person performing face-piece fit testing and is a good starting place for employers looking to commission fit tests for their workforce.

Protecting your workforce

If your workers need to use RPE in the workplace, you need to ask yourself:

- Have they been trained on the importance of using appropriate RPE?

- Do they understand how to use and maintain their RPE in accordance with the manufacturer's instructions?
- Have they been face-fit tested by a competent fit tester?
- Are they supervised in the correct use of RPE?

If you can answer yes to all of the above, you are well on the way to protecting the respiratory health of your workforce. For more information, you can always contact the supplier or manufacturer of your RPE, and the HSE and BSIF can provide guidance on RPE legislation. ■

Sources:

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respiratory-diseases.pdf](http://www.hse.gov.uk/statistics/causdis/respiratory-diseases.pdf)
www.fit2fit.org
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A recycling renaissance

In an interview with the National Federation of Demolition Contractors' CEO Howard Button, and their Group Manager Sophie Cox, Louise Calam delves into how the Demolition Recycling Information Data Sheets (DRIDS) are performing...

The Demolition Recycling Information Data Sheets (DRIDS) are the brainchild of NFDC CEO Howard Button. The aim of the DRIDS is to offer as much practical information on the recycling of materials to as wider audience as possible.

The DRIDS have been on the market for almost a year now. How is the take up?

Howard Button replied: "I have delivered a training course at Hemel to a mixed audience made up of ten nationwide demolition companies which was very well received. I've also given two bespoke courses: one to Wrings and one to Lawsons. The bespoke courses will carry on as and when a company asks for them. We have taken the feedback from all of these meetings and used them to improve the DRIDS system to base it on what members actually want. We have tried to incorporate suggestions into the system to improve it, although some suggestions such as incorporating COSH assessments is not practicable. It was very good to get out and show members what is going on with DRIDS and how it can be used."

How are you spreading the word about DRIDS?

Sophie Cox explained that "We are looking to increase the exposure for DRIDS over the next year with more direct marketing and perhaps some targeted marketing to smaller builders."

Button added: "We have attended the recent CIWM show in London and have gained a lot of valuable information about DRIDS. We won the CIWM award for DRIDS last year and we are looking to improve from our initial response to make the DRIDS even bigger."





What have you added to DRIDS recently?

Button: "We have added the facility now to demonstrate just how materials are recycled and reused on site. For example, there is a DRIDS sheet for concrete showing the options for recycling, but this didn't have the option to show the crushing and re-use on site. This facility has now been added. We've also added the facility to scan in waste transfer notes to create a full SWMP."

Cox: "Members now have access to an integrated management tool where they can choose which recycling routes they wish to use. They can put in quantities and the outlet receiving the material – in effect creating a waste management plan specifically for that project. The system has two levels. The members level allows the user to access all the necessary data and to create their waste management plan, whereas the basic version allows the user to enter their postcode to find the nearest recycling option only. The system will soon allow the contractor to download the information into an Excel spreadsheet format to pass onto their clients."

Button: "This is seen as a benefit just for our members. Once you unlock the project section, you can then start putting in your on-site processing. The DRIDS website is now totally interactive allowing you to put in various receivers for one material. Everything has

been designed to make it easier for the contractor to input their information. If members use the DRIDS system for their waste management plans, it can be used for their end of year waste recycling returns."

Are DRIDS likely to be a constantly evolving project for you?

Button: "Yes, it is a constant process, but we feel we are now getting to the stage where we know how the system is going to work and how it needs to be laid out. We are now on phase three of the development, with phase one of the information system now fully live, Phase two, the geographic outlet system, is active but is always being added to."

Will this section be on constant development for anyone else wanting to join the system?

Cox: "Yes, this section will be constantly updated as more companies want to join the scheme. While we appreciate there may not be lots of outlets available at the present time, the information that is given by the site as to what can be done with the material is of most importance. The information side of DRIDS, we see, is ideal in further operator level training."

How will this fit in with the training which the NDTG provides?

Cox: "The DRIDS currently links to the NDTG website and we are looking to get a series of toolbox talk

videos commissioned to go along with it. Some companies have asked if we can do a toolbox talk for each material, but I think that is down to site specifics."

You have had comments from the demolition industry, but what is the feedback from the construction and architectural sectors?

Button: "We have given demonstrations to the Construction Products Association (CPA) who thought it was great and took the opportunity to examine it and came back with some very good and valid comments."

Cox: "It is very beneficial for us that if we do come across any products that are difficult to deal with from a recycling point of view, the CPA are more than happy for us to discuss with them the recycling possibilities before new materials are put into production. This means that at the end of a material's life there can almost always be a positive outcome. What we don't want as an industry is for our recycling rates to come down because of a lack in input at design stages."

Are there any materials that you have on the list that have not got any information against them yet?

Button: "We have put HBCD on the list which is a fire retardant chemical usually found in insulation foams and foam used for furniture construction which in 2015 will be classed as a persistent organic pollutant. This means it will need to be disposed of correctly, but as an industry we have the problem of how you identify it. DRIDS will be the absolute tool for doing that. We are adding this material to hopefully draw people's attention to it. We hope that someone will come back with information saying that they can identify it, and know how to deal with it. DRIDS is not intended to be a forum, but we are hoping that people will be able to share their specialist knowledge with everyone else. The plasterboard industry is one that has come back to us with various tweaks and we have happily taken this on board and adjusted our information to suit."

Can you see DRIDS being taken up outside the demolition industry?

Button: "We want the whole construction and refurbishment industry to take the DRIDS up as well

as the manufacturing side too. We've spoken to the CPA along with the Main Contractors Group and large consultancy practices such as Arup, and the feedback has been very good.

We have now got DRIDS listed in the CITB's GE700 handbook so that general construction operatives can now read and understand the system. It is not just for the demolition industry."

Cox: "We also want the Federation of Small Builders to look at the scheme as we would think it would benefit their members too. They are coming across a variety of different waste products especially in refurbishment works."

How is all this work being funded?

Cox: "As with the majority of the funding for training purposes, we are very grateful to the CITB for their assistance in funding this project."

What is the next step for DRIDS?

Button: "We are looking to give contractors the chance to add materials that are not currently on the system. This is where the interactive system comes into play. We are also looking to include a carbon footprint calculator in the future, and the presentation we made to Arup was all about embodied carbon. This is going to be one of the biggest subjects over the next 12 months and we are working with Charlie Law who is an expert in carbon calculators from BAM, to look at the current proposals and try to simplify it. We need to keep the calculator as simple as possible to make it work. ■



National Federation of Demolition Contractors
Voice of the Global Demolition Industry

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Louise Calam

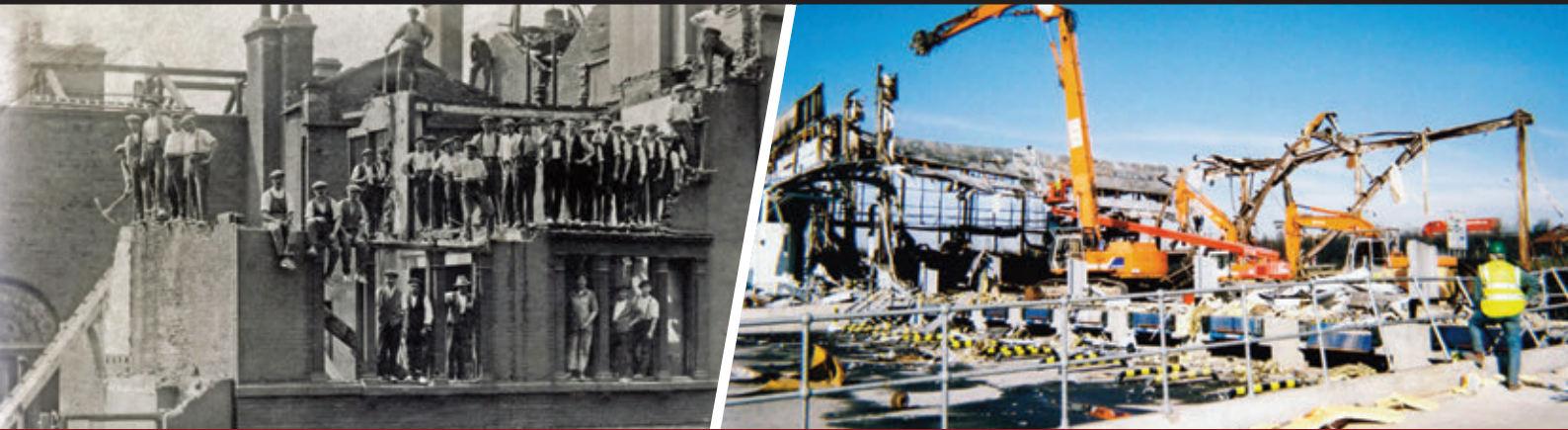
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Construction equipment sector in good health

The Construction Equipment Association provides a summary of the first Construction Equipment Sector Report in 10 years and outlines the New Business Funding for the Off-Highway sector...

The 2014 Construction Equipment Sector Report was formally launched at the CEA's Innovation and Engineering Conference on 10th June at Loughborough University. The report was commissioned by the CEA with the support of the Department for Business, Innovation & Skills (BIS).

The report shows the off highway equipment sector in good health – despite facing a number of challenges.

Business Minister Michael Fallon said: “The results from CEA's latest survey clearly show that the construction and off-road vehicle industry remain a key contributor to the UK's prosperity. With UK company sales now over £11bn for the first time, it is important that we continue to provide the right conditions so industry can continue to thrive.

“That is why we are investing over £1bn jointly with industry through initiatives such as the Advanced Propulsion Centre (APC) and a planned Technology Strategy Board (TSB) project to ensure companies across the sector have the support they need to develop the technologies of the future.”

The report revealed that the UK industry's output in value terms, is close to, or exceeding pre-recession levels, although unit terms continues to be well below. Despite the recession that saw UK production in unit terms fall over 50% the industry has remained resilient. Total revenue is estimated at over £11bn in 2013 – OEMs dominate revenues, followed by importers and distributors. Excluding the latter revenues are around £8bn. Component, services and related products account for over £2bn and manufacturing accounts for over £7bn of the total.

Companies throughout the supply chain are optimistic about future demand and sentiment is very positive, with most companies reporting that they are much stronger than before the recession.

“The UK industry will have to focus on maximizing the benefits of its key strengths and invest in the opportunities to mitigate any weaknesses and current and emerging threats.”

Improved productivity has resulted in limited employment growth, but companies are now investing profits resulting from higher margins. Employment is lower, but companies are seeking to continue to hire, although skills requirements are different than pre-recession.

Markets have evolved, with emerging markets accounting for most of the growth in sales, but traditional markets have remained depressed. Having faced one of the most severe economic downturns this generation, the industry has now recovered and is working to grow again, facing many global economic, legislative and commercial challenges. China and other emerging markets will account for around 50% of industry revenue in 2014, according to some figures.

Despite the continued Eurozone recession the UK's industry remains one of the world's largest exporters, with a significant 10% share of global production of major pieces of equipment.

Future innovation will require training and education in new skills, and at the conference the CEA launched



The report author, Alex Woodrow, Managing Director of researchers, Knibb Gormezano and Partners

its CEA Skills Advisory Panel – which is a new initiative to address skills issues in the construction equipment sector.

Machines are gaining more and more electronic functions, switching from purely mechanical functionality, driving a need for new electronic engineers, and creating opportunities in the supply chain.

The future needs collaborative development and investment. The UK industry will have to focus on maximizing the benefits of its key strengths and invest in the opportunities to mitigate any weaknesses and current and emerging threats.

These might be considered most critical to address;

Strengths:

- Flexible, skilled workforce;
- Strong component supply chain;
- Leading European production location.

Weaknesses:

- UK industry includes various OEMs, but of these only JCB is UK owned. This leaves the UK open to influence of overseas decision makers;
- Limited availability of some skill sets including engineering graduates and electronic specialists.

Opportunities:

- Development of niche products for global markets;
- Return to growth in UK and EU markets;
- Future CO₂ related emissions;
- Increasing strength of UK advanced automotive R&D.

Threats:

- Continued growth in emerging markets may see them become more attractive as production locations for advanced products;
- CO₂ legislation could become a major threat if

companies do not continue to improve the efficiency of their machines.

Conclusions and Recommendations:

- Investment in advanced electronics capability with development of transferable skills between automotive and related industries;
- Further investment in training and apprenticeship programs;
- Cross fertilisation of advanced design, manufacturing and product technologies between automotive and construction, not only in advanced powertrain but also electronics, controls and telematics;
- Development of a detailed technology roadmap for the global sector;
- Competitiveness of UK industry compared to less regulated markets needs to be maintained and supported;
- Support for CO₂ legislation based on machine productivity improvement, not solely engine CO₂ emissions.

The report author, Alex Woodrow, Managing Director of researchers, Knibb Gormezano and Partners states: "Our interviews with companies in the sector, show that there has been a growing influence of automotive methods and technology since the last formal report was produced a decade ago. A majority of R&D spend has been directed to regulatory compliance, much of it around the European engine emissions agenda. There is also a common concern that attracting the right skills mix to the sector is a major challenge – there are new jobs which require an amalgam of engineering and IT skills that did not exist 10 years ago."

CEA Chief Executive, Rob Oliver, said: "The report is a useful piece of work which will help set the CEA's work programme going forward, and we are grateful for the sponsorship of BIS in making it possible. As a

result of the feedback we have received from CEA member companies, we have initiated a Skills Advisory Panel, drawn from different stakeholders in and around the industry, to see how we can make a better collective impact on the issue."

"Companies throughout the supply chain are optimistic about future demand and sentiment is very positive, with most companies reporting that they are much stronger than before the recession."

The Report also focuses on the application of newer technologies in the sector. The Technology Strategy Board (TSB) confirmed that they will be launching a new multi-million pound competition for funding innovation projects in the Off Highway Sector which aligns with the recommendations of the Report. Jon Horsley, a Lead Technologist for the TSB, set out the timetable and procedures of the competition at the conference. Other speakers included Tony Pixton, the Chief Executive of the Advanced Propulsion Centre and Chris Thorne, Strategy and Programme Manager for the Energy Technologies Institute.

Delegates to the conference also saw a display of cutting edge technology equipment from CEA members including Bomag, Caterpillar, JCB, Komatsu, Nylacast Perkins TCP and Volvo – for the full story visit the New CEA Website <http://www.coneq.org.uk/leading-brands-support-the-2014-cea-conference-with-machine-and-product-exhibits/> ■

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Tackling Personal Injury Claims

We are all fed up of the number of injury claims that get brought, either by employees for 'accidents at work' or members of the public for alleged accidents that they've had as a result of someone else's negligence.

If someone has a genuine injury caused by someone else's negligence, then of course they are entitled to a fair and reasonable amount of compensation. For us though it's a case of 'where there's blame, there's a claim' gone so far that it's created a compensation culture and an entire industry of personal injury lawyers who actively 'farm' claims.

Insurance companies have started mapping hotspots around the country where there are concentrations of personal injury claims. It is no coincidence that these areas are exactly the same areas as where there are the most personal injury lawyers.

The Government has, to be fair, recognised that this is a problem and has taken some steps to try and tackle it: Earlier this year, government banned the referral fees that insurance companies can earn by selling your details to a solicitor if you've had a non-fault accident – that's how you get all the phone calls inviting you to make a claim after an accident.

Also, from August this year, the Ministry of Justice reforms have tightened up the process for injury claims and more importantly, capped the amount that a Solicitor can earn from making a claim on someone's

behalf. All the Solicitor can earn now is 25% of the award that the claimant gets if he's successful. So, gone should be the days when the claimant got a payment of £3,000 and the Solicitor got £4,000 – all he'll get now is £750.

It's not all good news though – Disease claims fall outside of the Ministry of Justice process (the portal, as it's called) so the Solicitors fees are not capped on these.

This is why we are now seeing a huge increase in the number of claims for people claiming to have conditions such as Vibration White Finger or Industrial Deafness. These take a lot longer to administer because all of the companies a claimant has worked for during his career might all be pulled into the claim and if it's over a long period of time, it might be difficult to identify all of the insurance companies involved.

So, the solicitors that previously 'farmed' injury claims are now actively targeting disease claims in order to make sure that their fee income is protected.

Recently we've heard of one solicitor who set up a 'Deaf Booth' in a shopping centre. People approached shoppers and in a quiet, whispered voice asked 'have you ever been exposed to excessive noise at work?' When the person replied 'Pardon?' because the question was asked so quietly, they were whisked off into the 'deaf booth' for a quick hearing test and guess what? Many of these people were told that their hearing wasn't

what it should be. 'Don't worry though, we'll make a claim on your behalf and get you the compensation you deserve'.

We genuinely admire the steps that government has taken to try and tackle this problem but in many ways it's just pushed the problem downstream. An entire industry has grown up around compensation claims and it will adapt to the environment and find new ways to encourage people to make claims, whether genuine and justified or not.

All we can do is work together to try and stop them coming in altogether or if they do come in, make sure we have our houses in order and are able to mount a strong defence.

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Emission legislation on the horizon

The Stage V emissions negotiations are at a critical stage with the European Commission. Malcolm Kent, Senior Technical Consultant at Construction Equipment Association summarises the story so far...

Recent articles in the trade media have covered the development of the next stage of engine emissions reductions, but matters have now moved on. The European Commission are sticking to their timetable to have their proposal published any day now, and in preparation for that have let everyone know what they are thinking to include. Most of the content is what we have expected for some time, but there are some surprises thrown in as well.

Firstly, let's look at the technical matters: the proposed emission limits and what they will mean.

Stage V Emission Limits

The first thing to say is that as expected, the new controls will cover all engine powers. The current stages only regulate diesel emissions from engines in the range of 19kW to 560kW so diesels outside of that range had no emissions limits at all for the European market. This hole is being plugged and the new limits will apply to engines from zero kilowatts on up, although the technical requirements will be different depending on the engine size.

One key thing that we had not known until recently was where the Commission would pitch things in relation to the emission limits. There have been extensive discussions about the options: making the limits the same as in the USA (what the Americans call Tier 4 Final), or basing the limits on the on-highway Euro 6 levels (what the Commission called "road ambition"). The Commission have now shown their hand and what's in there is USA-Plus. The 'plus' part is particle number counting, which we'll come to shortly.

There has been increasing evidence in recent decades that the particles in the air which are most

dangerous to health are the very, very small ones – ultra-fine particles – and that really does mean small. We are talking about specks of dirt down to ten thousandths of a millimetre across, and smaller. Because of this there has been pressure to limit the emissions of these into the atmosphere, and that is where particle number counting comes in. In all the previous stages, including the new Stage IV, all the limitations on particulate emissions have been on the basis of the weight of particles emitted in relation to engine power, with no discrimination as to the sizes of those particles. This meant that an engine could meet the requirements either by emitting a small number of larger particles or a large number of ultra-fine particles. That will change with the Commission proposal in that as well as limits on the total mass of particles emitted, there will also be limits on the numbers of the fine particles. This will apply to the full range of engines which are covered by the stages up to Stage IV, those from 19kW to 560kW, but not to those engines being regulated for the first time, i.e. below 19kW or above 560kW.

So what does this change to particle number counting mean for engines? It means particulate filters. Engine makers have found different ways of meeting the requirements of each previous and current stage, using different technologies to get the emissions of particulates and NOx (the other key pollutant being regulated) down to the required levels. But Stage V, assuming it ends up looking something like the current proposal, will probably force engine makers to adopt particulate filters if they don't use them already. Diesel particulate filters do trap a large proportion of the ultra-fine particles and are the only currently widely available technology that allows engines to meet the proposed limits. However, we should



never underestimate the ingenuity of engineers: someone might yet come up with an alternative way to meet the new requirements!

What about petrol engines?

The Commission are wise to the possibility that there might be a temptation for manufacturers to get round the limitations on diesel engines by re-powering machines with petrol engines. The argument could go that diesel engines are getting considerably more expensive due to emission control technologies, so why not replace them with a simpler, cheaper petrol engine? Petrol engines for off-highway use are not currently regulated to the same degree as on-highway, so relatively old technology could be used for some power categories. To head off the possibility of a wholesale switch to petrol power, the Commission are including limits for petrol engines in the new regulations to make sure that if companies do decide to go down that route, the result will be just as clean as if they had stuck with diesel.

What about transitional arrangements for the new stage?

We have looked at the arguments about transitional arrangements in previous articles, such as the flexibility allowance. The recent bombshell from the Commission was that they are thinking to scrap that altogether. The only provision which they are thinking to include is that engines built in the final six months of the old stage can still be used in building machines in the first year of the new stage. That would put tremendous pressure on companies in terms of readiness for the new stage and in inventory management. However, possibly the scariest part of the Commission's thinking on such matters is in relation to replacement (spare part) engines.

Replacement engines

The current laws allow that if an engine is needed as a spare part for an old machine it can be built exactly as the original engine was, meaning that it would need to conform to the emissions limits in place at



Malcolm Kent, Senior Technical Consultant, Construction Equipment Association (CEA)

the time the original engine was built, even if the limits have reduced in the meantime. This allowed a straight like-for-like replacement: a drop-in spare part. The Commission are concerned that this might be allowing a lot of engines on to the market which are old spec and high emitters of pollution and are considering to ban the production of replacement engines once a new stage has come into force. As we all know, newer engines are seldom a straight replacement for old ones as there are many changes that are made for a new installation, such as the electronics, the cooling system, the exhaust system and the physical space taken up, so we can't think in terms of just supplying a Stage V engine to replace a Stage II engine, for instance. A ban on building a Stage II engine for a spare part would mean that before the end of Stage IV, every engine maker, along with every machine manufacturer, would need to estimate how many replacement engines they will be asked for for all the previous stage engines they have

ever built. If they get it wrong then either they will have lots of useless engines on their hands, or customers will have to scrap machines because they can't get a replacement engine. And if they do get it right there is still the question of storing all those engines, and paying for the cost of that stockpile.

As you can imagine, strenuous efforts will continue to be made to get the Commission to change their minds on this one.

When will all this happen?

The schedule is firming up. Because of some dates already in related legislation there is one fixed stake in the ground for some aspects of Stage V, and that is 1st January 2019. Current expectations are that the full effects of the new stage will be phased in around 2019 to 2020, depending somewhat on how the legislation progresses through the stages in the European Parliament and the Council of Ministers. The Commission will publish its formal proposal soon in order to allow it to get on the work programme for the Parliament when the new one convenes after the European Elections in May this year, so then we will see whether manufacturers can live with the proposal or whether the battle ground moves on to Parliament. ■

.....
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Reducing risks for telehandlers

Construction Plant-hire Association's Kevin Minton outlines the new guidance for telehandlers to ensure best practice in construction...

In 2013, the CPA's (Construction Plant-hire Association) Strategic Forum Plant Safety Group published a revised guidance intended to help industry reduce the risk of accident and injury when working with telehandlers. Additional new guidance on suspended loads on the 'Safe Use of Telehandlers in Construction' has been written to give clarification on good industry practice. This new guidance is now available for download as a four-page stand-alone document and will be incorporated in the main guidance document at its next published revision.

Lifting and travelling with suspended loads is not the primary purpose of telehandlers. When selecting equipment for this activity the first step should be to ensure that a telehandler is suitable for carrying out the task safely. Where other equipment is more suitable, it should be used.

The lifting of suspended loads with telehandlers and travelling with those loads is generally more hazardous than lifting unit loads on the forks of a telehandler.

For example – a 17m telehandler was lifting steel columns from a nearby lay-down area and positioning them for erection. Whilst manoeuvring with the boom section extended to give sufficient ground clearance, the telehandler tilted to one side causing the machine to overturn. The telehandler came to rest when the extended boom penetrated through an adjacent building roof. At the time of the incident, the vehicle was traversing an excessive slope of approximately 1:6 (9.5°, 16.5%). The accident was caused by inappropriate use of the telehandler for this task.

The particular issues associated with using telehandlers to lift suspended loads are covered in the

new four-page guidance. These include Planning, Operator Training, Lifting suspended loads and Travelling with suspended loads. A more detailed explanation of the issues covered in this document, together with the general safe use of telehandlers, can be found in the original document, 'Safe Use of Telehandlers in Construction', which may be downloaded free of charge from the CPA website.

In the new document, the section dealing with tyre replacement and tyre pressures has also been extended, to reflect the importance of tyres on the stability of a telehandler. More emphasis has been added to the guidance on use of seatbelts as an essential safeguard to protect the operator if the machine overturns.

Summaries of "Key Points" for operators and for supervisors have been developed based on the guidance. It is intended that these can be adopted and adapted by any company as the basis for pocket cards, posters or any other relevant format.

The revised version of Safe Use of Telehandlers in Construction is published by the CPA (Construction Plant-hire Association), on behalf of the Strategic Forum Plant Safety Group, and is available to download from the CPA website at <http://cpa.uk.net/sfpsg/#Telehandlers> ■

.....
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Director

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Qualify your employees at the National Construction College

The latest plant training developments from the National Construction College are outlined here by Chris Blake, Curriculum Development Manager (Plant) at the CITB...

The National Construction College is now delivering its latest CPCS category – Plant and Vehicle Marshaller course at Ashbourne in Derbyshire, Kings Lynn in Norfolk, and Coleg Menai in Anglesey, North Wales.

It is vital that you ensure the operatives you have working in vehicle movements are skilled to the new standards set by the latest CPCS Plant and Vehicle Marshaller category.

As always, we can tailor the duration of the training to reflect individuals' experience, but novice courses last for three days with two days training, then theory and practical assessments on day three.

Where companies or individuals have attended our Vehicle Marshalling course previously we are happy to offer advice and guidance on their current skill levels to ensure only the necessary time is given to achieve this important new category.

New – Combined 180 Wheeled and 360 Tracked Excavator training

Reflecting the similarities of the Servo controls of specific plant categories, NCC have combined two of their excavator courses to provide foundation training and assessment in operating and maintaining 180 wheeled (CPCS Category A12) and 360 tracked excavators (CPCS category 59). Candidates must have passed the CITB Health, safety and environment test



within two years of attending the course. For eligible employers, a significant proportion of the cost will be offset by £1640 training grant (available at £50 per training day (14 days), £60 for successful completion of each of the two Theory Tests and £410 for successful completion of each of the two Practical Tests).

Successful candidates will qualify for the CPCS Red Trained Operator Card.

Lifting with Excavators – A59C category

As industry continues to fully utilise the 360 excavator incorporating lifting activities, there has never been a better time to ensure your Operators are fully certificated, as experienced Blue card operators need only complete the applicable lifting theory assessment, this is a win-win situation for employers. A theory assessment of an hour maximum with the National Construction College at a cost of just £100 means minimal operator down time and a very cost effective solution to ensure your company is at the forefront in qualifying staff.

Two employers making full use of NCC's facilities are Lynch Plant Hire and Houlihan & Co.

Lynch Plant Hire comments: "We really care about ensuring our operators have the very best training in the industry and, along with our own in-house training team, we have been working with the team at the College. We want to go the extra steps to ensure our operators are the very best. We've

received a wonderful, second to none service from the College and we have plenty more courses booked for 2014."

Sam Shine, Health and Safety Executive representative at Houlihan's added: "Following a number of serious injuries sustained through lifting with excavators, and such a regular operation within our operators daily duties, our entire fleet of excavator operators carrying out craning or lifting duties must have the lifting endorsement (A98) included on their CPCS card. The NCC has encouraged this and provided persistent assistance in order to carry out our company requirements. That not only suits them but us as well. We look onwards and upwards with our forthcoming projects with the NCC." ■

For scheduled course dates and information on how to book:
www.citb.co.uk/training



National Construction College

.....
Chris Blake

Curriculum Development Manager (Plant)

CITB – National Construction College

Tel: 0344 994 4433

plant.enquiries@citb.co.uk

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National Construction College Central

Ashbourne, Derbyshire

Coleg Menai

Llangefni, Anglesey

Tunnelling and Underground Construction Academy (TUCA)

Ilford, London





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 contaminants 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

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Our Suppliers Guide contains all key contacts within the planning and building control sector.

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