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ADJACENT PLANNING & BUILDING CONTROL TODAY

IN THIS ISSUE

In our largest issue to date, we cover topics ranging from the housing crises to the recycling and recovery of demolition waste. Highlights include:

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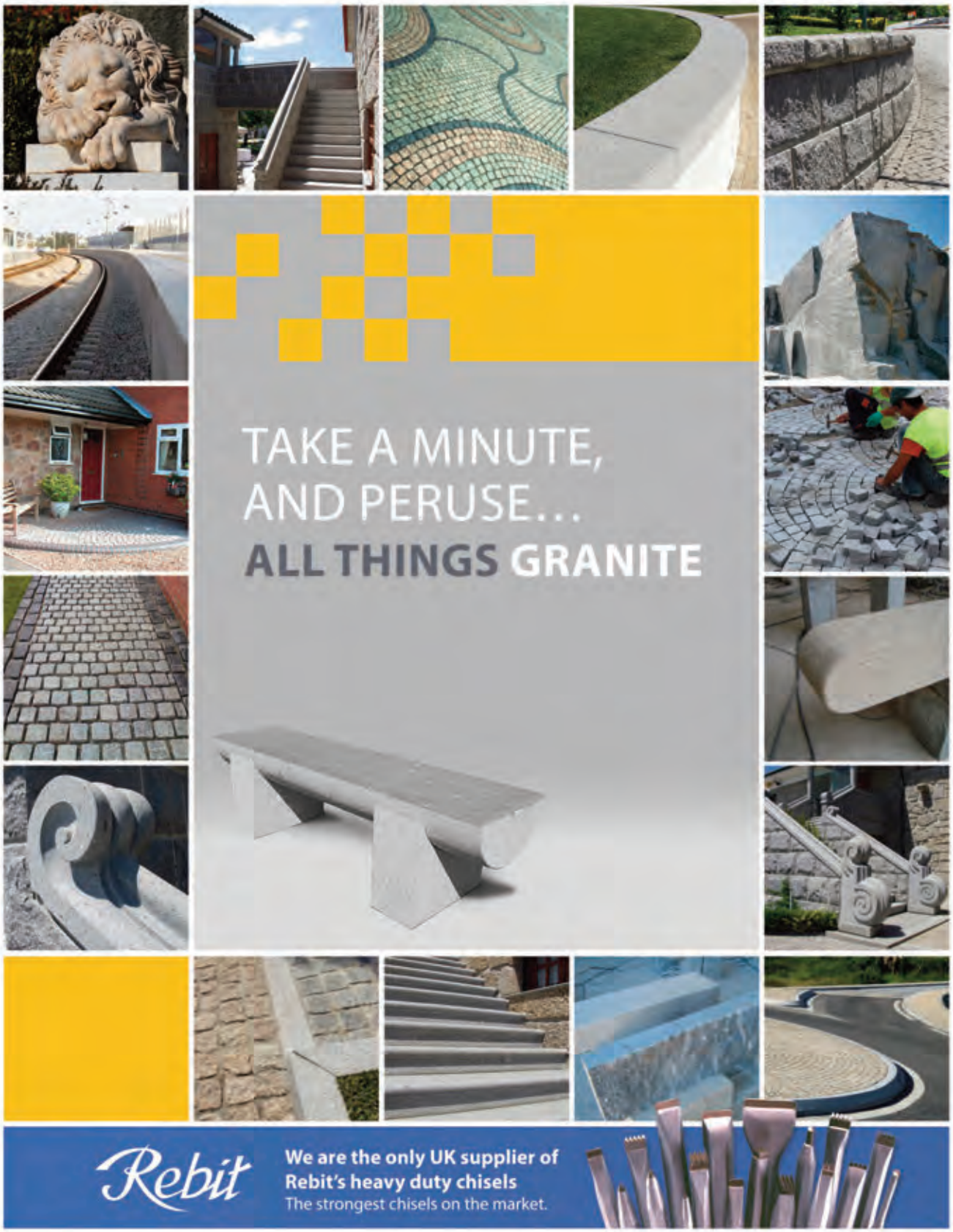
Accurate Data

Ensuring accurate data for BIM projects is a key objective according to **British Gypsum**

The data rich environment

Make use of information contained in data rich assets say **Clearbox**



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Foreword

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

The industrial strategy for construction, Construction 2025 was published in July 2013. It is a partnership between industry and Government. It sets out a vision and high-level plan describing how industry and Government seek to transform the UK construction industry over the next decade working in partnership.

Construction 2025 sets out four bold ambitions to be achieved by the year 2025:

- 33% reduction in costs, focusing on whole-life costs;
- 50% reduction in time, from inception to commissioning for new build and refurbished assets;
- 50% reduction in greenhouse gas emissions across the built environment; and
- 50% reduction in the trade gap between net imports and net exports, with more products and materials sourced and manufactured within the UK.

The strategy has five broad themes: People, Smart, Sustainable, Growth and Leadership.

Since its launch, Construction 2025 has been widely accepted across the construction industry as the blue-print for transformation. Work is proceeding on all fronts to make the strategy happen. The following is a brief overview of some of the more significant workstreams and achievements.

People
There is a considerable body of activity on developing the skills needed by industry to support the future pipeline of construction work. This includes promoting apprenticeships; supporting young people on site; rationalising competence cards; attracting people from other sectors; diversity initiatives; addressing the image of construction; and increasing engagement with school children, teachers and careers advisers.

Smart
BIM Level 2 is progressing well. All the major Government departments should be using BIM by 2016. Industry take-up for BIM Level 2 is also going well. Government, industry and academia are now working on the development of BIM Level 3.

Government and industry have started an important exercise to identify the innovation priorities for construction, in support of the ambitions of Construction 2025. A plan for taking this work forward should be published by mid-2015.

Sustainable
The Green Construction Board has defined its priorities for the next two years. An important part of this has been the publication of an Infrastructure Carbon Review, demonstrating how in infrastructure reduced carbon can also mean reduced cost.

Work continues to support a sustainable construction industry. Government continues to update its construction and infrastructure pipelines and to make these more accessible to construction companies across the UK. This has been supplemented by more detailed work in London and Greater Manchester by their respective Chambers of Commerce. Guidance has been published on three new models of construction procurement designed to further the ambitions of Construction 2025.

Growth
A construction supply chain payment charter was published in April 2014.

UK Export Finance resources have been increased to provide further support to UK suppliers exporting overseas.

Leadership
A new Construction Leadership Council has been created to oversee and drive the implementation of the strategy. This is co-chaired by the Rt Hon Dr Vince Cable MP and Sir David Higgins. ■

My role as Government Chief Construction Adviser has been extended in office by a further year, in part to provide continuity beyond the General Election in May 2015.

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Foreword

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Senior Area Technical Manager
National House Building Council (NHBC)

Well, another festive season has come and gone, and as I am writing this I am thinking of the challenges that this coming year will bring. It is an amazingly big year for all building control and planning professionals as we move towards some momentous events that will shape the way that we interact amongst ourselves and with the wider construction industry.

First of all there is the small matter of the election in May. All the mainstream political parties have announced that housing and construction will be a major part of their manifestos. This is all good news for the industry as it is clear that with our economy on the up, construction has a major part to play in helping to drive the recovery and help achieve a secure economic base from which the economy can flourish.

Whichever party (or parties) are successful in May, it is clear that the industry is being looked at to increase supply of new housing and infrastructure. As always, we will respond to these calls. However, to do this does not come without presenting its own challenges. Getting the right people to do the jobs we need is already becoming increasingly challenging and it is great to see an increasing number of schemes around the country aimed at bringing new blood into the industry. I went to a meeting shortly before Christmas where a group of Approved Inspectors was offered the opportunity to take on apprentices. This is an encouraging development in an industry where historically most new trainees were taken on in the public sector. Hopefully the introduction of this scheme will enable the private sector to play its part in introducing new professionals into the industry, and who knows, maybe even a bit more pan-industry working on ensuring they are all-round professionals.

The second biggest challenge will be the implementation of the Housing Standards Review, which will see Local Planning Authorities making decisions on "optional" Building Regulations for new housing which will then be enforced by Building Control. The optional requirements will focus on access and water, with a new mandatory standard for security. There is also a proposed space standard which will remain with planners to enforce if selected. As yet, we do not know the final details of what is to come, but we have been promised a written Ministerial Statement by the spring as well as the accompanying regulations and Approved Documents with the full system coming into force in the autumn of this year.

As well as the Housing Standards Review, CLG are also beginning exploratory work on changes required to Part B – Means of Escape and the Chief Fire Officers Association is researching the effectiveness of the Regulatory Reform (Fire Safety) Order with a view to recommending any changes required to that. It is likely that we may see consultations on both of these later in the year.

Should keep us busy don't you think? ■

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Introduction

Planning policy has seen a great deal of change since the Coalition government took over the political reins. But as general election fever heats up over the next few months, experts believe we will see some planning committees almost stalling planning processes until after the election in May, with purdah further making an impact on any major decision-making process.

This hiatus in proceedings certainly won't help the housing crises, but we should see the various political parties addressing the issue in their manifestos. Developing a meaningful housing policy blueprint will be seen as recognising a basic social need and could well be a vote-winner. PBC Today wanted to ask how we solve the housing shortage issue, and this edition aims to provide some answers from experts including Professor Alister Scott and David Orr.

Scott believes that the wrong question is being asked. It shouldn't be simply a question of how many houses we need, but rather "what kind of future places do we want to create?" Scott argues that this fundamental societal question is overlooked as the housing debate becomes increasingly disintegrated.

David Orr of the National Housing Federation provides us with a 'top ten wish-list', arguing that the Homes for Britain campaign should be the one voice that is most heard and noticed in the general election.

PBC Today also examines the latest government consultation on the SuDs programme with Sam Ibbott of the Environmental Industries Commission looking at how this will be delivered through the planning system.

In terms of BIM, this year will be incredibly busy as we see the Digital Plan of Work toolkit released along with PAS 1192-5. This edition, as ever, has an extensive focus on BIM, with Stephen Hamil discussing the Digital Plan of Work toolkit and Anne Kemp looking at how BIM and GIS can deliver infrastructure projects. Steve Thompson, Chris Witte and Richard Blakesley of BIM4M2 all provide very different discussions on BIM for manufacturers, and Sarah Birchall of BSRIA describes what is required by Government Soft Landings.

Karen Alford, BIM Project Executive at the Environment Agency has also contributed a very interesting article highlighting how a government agency is implementing BIM, whilst Julian Booth of Olswang LLP provides us with a legal framework viewpoint.

This issue also examines energy efficiency with articles detailing fuel poverty and mitigating energy losses within buildings – another key topic for this time of year.

Whatever your profession, I hope you find something of interest in this issue and look forward to hearing your thoughts and comments. ■

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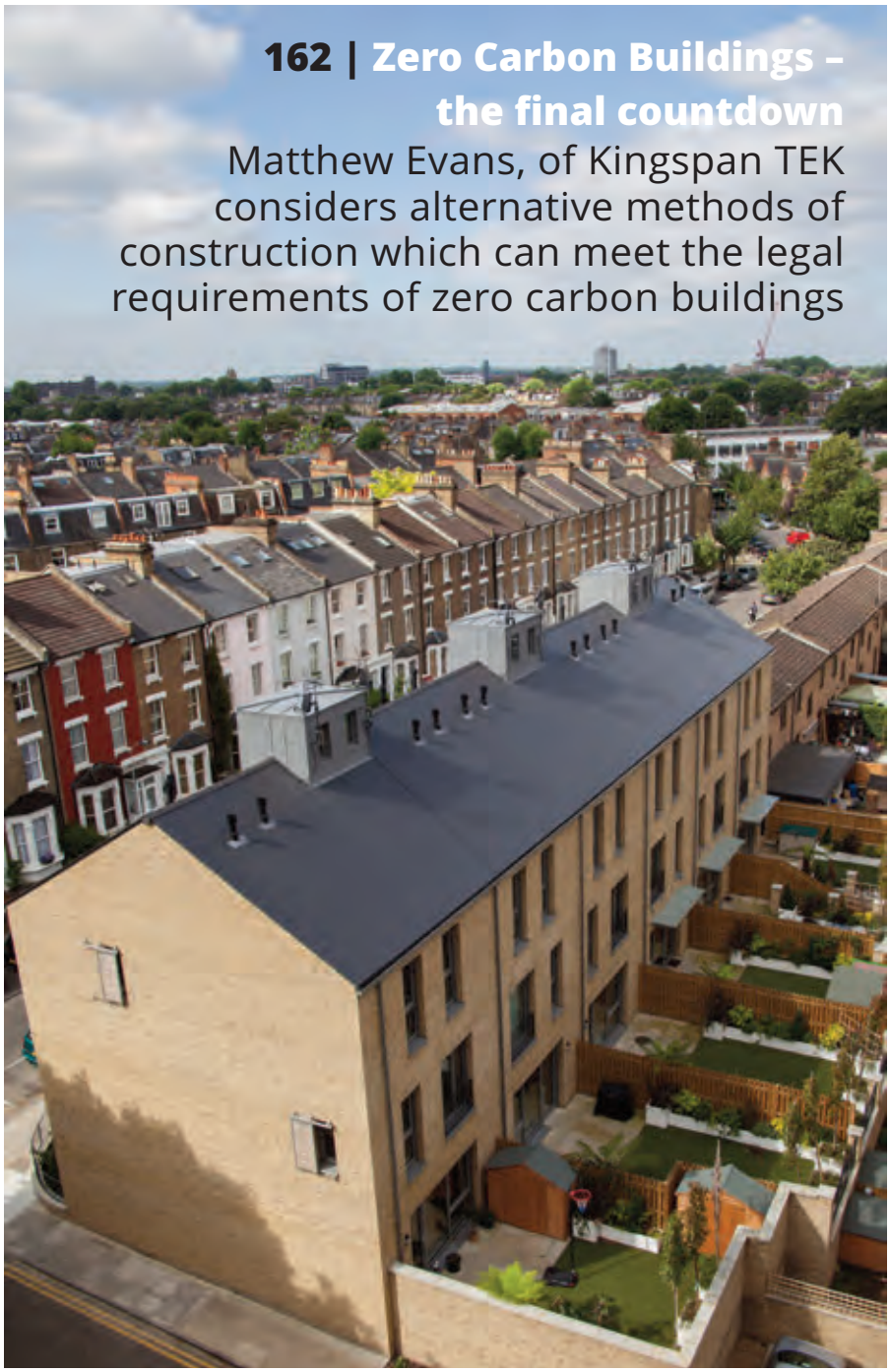

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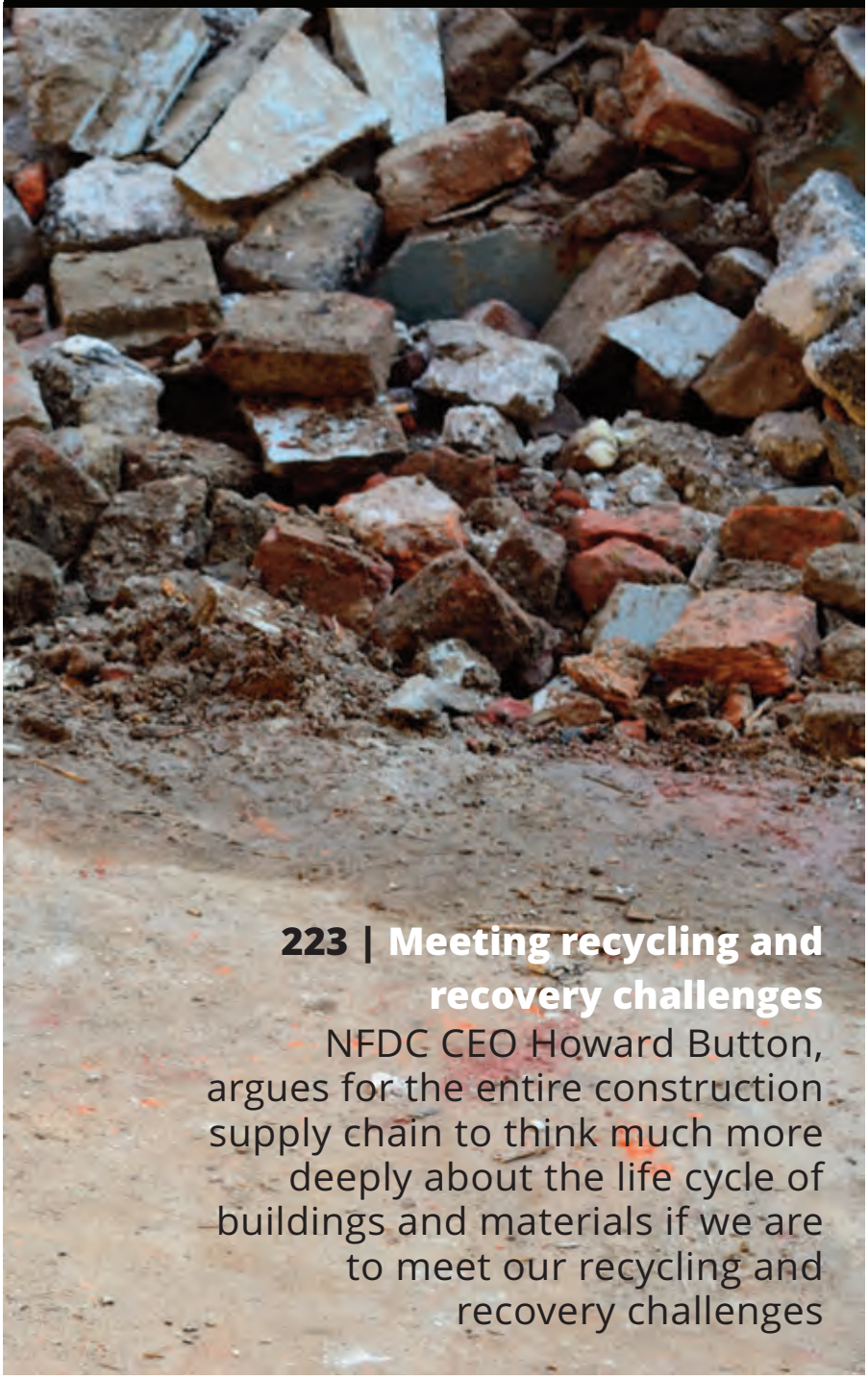

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Behavioural Safety Leadership

Good safety leadership positively impacts a company's 'bottom-line', as those companies with good safety performance are better all-round economic performers. This stems from [a] reduced incident rates; [b] improved working conditions and employee motivation; and [c] the positive influences on productivity and profitability. In other words, good safety leaders also manage their operations profitably. This is often attributed to a company's leadership driving the safety culture to achieve excellence. Such results show how important it is for all managers to demonstrate their safety leadership: from the most senior managers downward.

What is meant by Safety Leadership?

Good safety leaders develop 'safe production is our number one priority' as a core concept for all employees. Leaders stress that personal responsibility for safety is about everyone working safely and looking out for everyone they come into contact with, and always intervening when observing unsafe behaviours or conditions. They inspire others by showing they genuinely care about their people: this is done by raising the profile of the safety effort, and helping individuals to feel they are a part of something bigger than themselves. Good leaders challenge everyone to make a personal commitment to be the best they can be, facilitate people's needs to work safely, make safety fun, and release people's energy and talents to make it happen.

A successful safety leader also inspires others by creating and clearly articulating specific objectives that are both challenging and achievable, within an expected timeframe for achievement. Highlighting the benefits of improving safety performance, they consistently remind people why safety is important, and ask for others input to eliminate obstacles to safety performance. They also follow up with any necessary training and material resources. To maintain performance, they celebrate every safety success, create awareness of the benefits achieved, and most importantly of all, positively recognise every incident free day.

Behavioural Safety Leadership in Practice

Behavioural safety leadership is primarily concerned with what managers do in regard to safety, rather than what is said. Typically this means leaders are:

- Keeping their finger on the pulse of safety in their 'sphere of influence'
- Observing and having safety conversations with people
- Supporting people in their various roles (e.g. behavioural safety observers, safety project administrators)
- Ensuring corrective actions are prioritised, attended to, and completed (usually within 30 days)
- Ensuring that information about their behavioural safety process and other safety efforts is being communicated to all (e.g. the results of observations, etc.)

Within a behaviour-based safety (BBS) process there are many practical ways managers can demonstrate their safety leadership. By and large, practical behavioural safety leadership means visibly supporting all of the company's safety efforts. Specific examples are listed below, although the list is not exhaustive:

- Report corrective actions
- Ensure corrective actions are completed by their due date
- Regularly hold 'one-on-one' safety conversations with personnel
- Regularly conduct safety 'walk rounds' and recognise people when they are working safely, or coach those working unsafely
- Train personnel in hazard recognition and company safety rules
- Write policies, procedures, and/or safe work practices
- Keep people informed about safety issues and safety successes
- Detect, assess, and correct hazardous working conditions
- Complete reports on all close-calls and incidents
- Regularly review safety performance, and provide feedback to all

Example behavioural safety leadership checklist

Category 1: BBS Support	Yes	No	N/A
I offered support to my BBS observers			
Category 2: Leadership Observations	**Yes**	**No**	**N/A**
I engaged individuals in a safety discussion by completing two one-on-one safety observations this week			
Category 3: Corrective Actions	**Yes**	**No**	**N/A**
I completed a corrective action within 30 days			

Behavioural Safety Leadership Checklists

Within a BBS process, such behaviours as those listed above are used to develop 'self-managed' safety leadership checklists that contain safety leadership behaviours defined by the managers themselves. The checklists serve to remind people of their weekly safety leadership responsibilities and activities. They also provide data to verify that safety leadership efforts are being made consistently. Managers use these to record their safety leadership activities each and every week. The data is collected and entered into a database, so that an average site percentage safety leadership score can be calculated to ensure regular feedback can be provided to all, with improvements celebrated.

There is a close relationship between the levels of safety leadership displayed and that of employee's safety behaviour. As the percentage of safety leadership increases, so does employee safety behaviour. As it diminishes, so do employee safety behaviours.

The safety leadership checklists tend to differ for different management layers (i.e. senior site management teams, line-managers, and supervisors), as typically, they exhibit slightly different sets of managerial safety leadership behaviours. For example, a senior manager may find it difficult to conduct a safety conversation once or twice a week, whereas a supervisor would have little difficulty doing so. In these instances, the senior manager may prefer to pick up the telephone once or twice a week and speak with one of his or her direct reports and ask about the BBS process or safety in general. In this way, the senior manager still has a safety conversation, therefore transmitting the message that safety is a core value.

Importantly, the checklists only contain safety leadership behaviours within the control of each layer of management. Where the management team is relatively small (e.g. less than ten) it may be better to develop one that everyone can use.

The safety leadership checklists are usually developed during 1-2 hour 'managerial focus group' exercises, so that the managers concerned can develop them according to the behaviours they know they can do regularly, each and every week. Usually these are divided into various support categories (e.g. BBS Support, Safety Interactions, Corrective Actions, etc.) with 2-3 behaviours within each (see table).

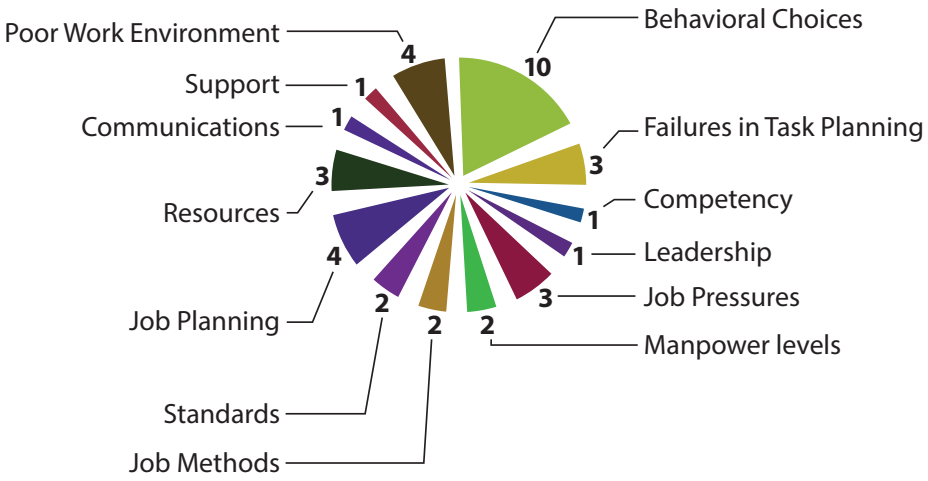
Behavioural safety leadership walk-rounds

Based on the classic behavioural safety principles of observe, discuss, record, analyse, and act, behavioural safety walk-rounds are one of the most powerful ways safety leaders can control site safety, and demonstrate their ongoing safety leadership. For example, on an Oil & Gas facility build in Ireland, this approach reduced the site injury rate to zero within two weeks, with a workforce of 800 people. When the number of safety leadership walk-rounds reduced, as people thought safety was under control, the number of incidents began to rise again. Once re-introduced as intended (two observations per week, per manager), the incident rate dropped back to zero. This showed that the greater the number of safety leadership observations, the greater the impact, as the potentials for a serious injury or fatality (SIF) were reduced.

Subsequently, an observation card that specifically targets potential serious injuries and fatalities (SIF's) was developed. This contained pre-defined categories of activity (Access and Egress, Mechanical Lifting Operations, Body Positioning, etc.,). This was named the PEER® process. It also included discussion categories to identify any underlying contributors (Poor Job Planning, Insufficient Manpower, Poor Communications, Ineffective Leadership, etc.,) leading to the unsafe behaviour or unsafe conditions. This type of categorisation proved useful, as it provided guidance on the kind of safety issues being experienced, and facilitated the provision of focused feedback. Rolled out in many companies around the world, in various sectors (e.g. aviation, construction, energy, manufacturing, oil & gas, shipping, smelting, and utilities) the resulting improvements have been sustainable.

A major strength of the PEER® behavioural safety leadership process is the speed of

execution, as training is minimal (half-day classroom, half-day site practice), while exerting a rapid impact on incident rates. Before embarking on regular PEER® observation tours, managers are trained at a four hour session to identify permanent and temporary hazards related to their industry, as well as the various types of safety behaviour to look for during their walk rounds. They are also trained in communication and coaching skills to help them positively influence behaviour change during an observation, and win over people's hearts and minds to the safety cause.



Trained managers then conduct regular safety observations, and have safety conversations with people during their normal daily duties twice a week or so. This presents every manager with regular opportunities to positively reinforce safe behaviour, or coach those behaving unsafely, while also discussing the underlying reasons for an unwanted behaviour. Cumulatively, this constant focus on safety behaviour leads to higher levels of safe behaviour, and dramatic reductions in all types of incidents, with positive spill-over effects on productivity and quality.

With the PEER® process, no checklists are carried during these observation tours, so people do not feel intimidated in any way. However, taking advantage of technology, after the safety interaction is complete, the results of the observations and discussions are recorded in the accompanying PEER® software. Tying the observations to risk assessment and root cause analysis, users are able to simply distinguish between those unsafe behaviours and conditions that had the potential to cause a minor injury or SIF. With powerful trending capabilities, the software allows users to monitor the build-up of the causes of potential SIFs so that appropriate corrective actions can be taken to eliminate them. The collated results are also used to provide real-time feedback on the overall safety leadership effort, which helps to identify any underlying issues detracting from good safety performance.

As with any behavioural safety process, it is extremely important to regularly analyse the observation data to highlight strengths and areas of opportunity.

This data analysis is used to facilitate any corrective and preventative actions, as well as to track progress. For example, the results can help to re-focus each safety leader's ongoing observations and conversations on behaviours shown to be problematic. Similarly, they can be used to highlight and address those underlying contributors shown to be directing people's unsafe behaviours. Eliminating just one of these can significantly reduce the number of potential SIFs. Widely disseminating feedback on a regular basis to site personnel about the observation results is a must: This can take place via weekly managerial meetings and toolbox talks, as well as using posters, newsletters, or any other medium that is convenient and effective.

Conclusion

Visible safety leadership is important for helping employees work safely. This article has discussed two proven, but related, strategies for enhancing safety leadership to ensure an impact on performance. The evidence shows that there is a close relationship between managerial safety leadership and employee safety behaviour. Safety Leadership can positively impact people's safety behaviour by up to 86%, and reduce incidents by around 35%. Leaders who set their people up for success, facilitate their follower's needs, and show they care, are very successful at positively impacting performance.

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The Disintegration of the Housing Debate

In addressing the urgent need for more housing, Professor of Environment and Spatial Planning, Alister Scott believes that key participants in the housing question need to embrace the economic, social and environmental drivers of development in a more joined-up discussion...

As we move inexorably towards the general election in 2015, the issue of housing policy and delivery will become increasingly important in political debates. Current estimates of future housing need reveal an annual need for some 265,000 additional dwellings but, due to significant past undersupply, this figure may well need to rise to 300,000 (RTPI, 2014). Invariably, building houses on this scale will invoke negative political and public response. But how and where should these homes be built?

In my view, there are no 'magic bullet' solutions as the housing question is complex demanding much more cross-sector thinking; but this type of approach is something conspicuously absent in contemporary policy and decision-making processes. Unfortunately, this is also a view that does not sit well with the media, politicians or the public.

Arguably, we have reached this impasse because the 'wrong' question is being asked. Leaving aside the intractable issue of how 'need' is measured, the question should not be how many houses do we need to build; rather it should be: what kind of future places do we want to create? But this fundamental societal question is increasingly overlooked as the housing debate becomes increasingly disintegrated. New development is viewed in isolated pieces without reference to its place in the overall built and natural environment jigsaw. The fetish for housing

numbers alone pays little reference to the infrastructure, community, economic and environmental services needed to support them. This is symptomatic of a wider agency and sectoral myopia.

Potential solutions of new garden cities such as Ebbsfleet and Bicester have been heavily promoted by parts of the government. Yet the government is also providing renewed policy support for protecting green belt from new housing incursions; such political posturing and potential contradictions generates significant scope for land-use conflict and uncertainty.

This is exacerbated by the vacuum in strategic planning and where some 70% of local authorities are yet to make their local plans fully NPPF compliant (Source: PINS December 2014). Increasingly, questions are being asked about the competency of the Duty to Cooperate in resolving unmet housing demand, together with other fundamental components of the housing question such as speeding up the development pipeline, overcoming landbanking by developers, identifying viable delivery mechanisms, and delivering affordability and social and environmental justice through new schemes such as help to buy.

So I want to explore a different way to frame and manage the housing opportunity/problem. In doing this, however, the key participants in the housing question need to go beyond the current Duty to Cooperate models; moving out of established sector-based comfort zones and embracing the economic, social and environmental drivers of development in a more joined-up discussion.

First, there needs to be a more holistic approach to objective assessments of housing need. At present, too many assessments are made by the local authority in isolation resulting in challenges at examination. Unfortunately, the guidance and metrics for housing need assessments are beset by statistical anomalies and dubious econometrics, making any derived figure disputable. A collaborative approach such as that pursued by the joint housing study of the Birmingham and Black Country LEPS provides a useful model forward under the auspices of the Duty to Cooperate. However, there is a powerful

case for making such models more transparent and understandable and also linking them to transport, employment, waste and climate projections.

Secondly, there needs to be strategic consideration and assessment of different growth models, set within the opportunities and constraints of housing market areas, not just within single local authorities which do not represent functional geographies. Despite claims to the contrary, there is no way that solutions based on garden city ideas alone can address the housing requirement nor, equally, that brownfield sites alone can meet the projected housing need. So we need to bundle several options together within housing market areas that deliver multiple economic, social and environmental benefits. Here a potential option mix might include new towns, urban extensions, urban densification, public transport extensions and dispersed development for example.

Thirdly, we need to move away from any one-size-fits-all approaches that restrict such options. In particular, the green belt has moved past its 'use by' date. I have argued elsewhere that we need to sensitively rethink the value of the green belt in order to maximise its environmental and social benefits, but only as part of a wider discussion of placemaking. Such green components form a vital link in development considerations: not as bolt-ons, but rather as core infrastructure to help promote liveability and growth.

Fourthly, we urgently need to consider how housing and employment developments are to be financed and delivered. All too often, the debate revolves around the perceived problem of securing planning permission, but this is only one part of the overall development pipeline. Significantly, the development of 10,000 homes at Northstowe is being delivering by the Homes and Communities Agency as landowner on former RAF land – hence a brownfield, and previously-developed site. In many ways this might provide an instructive way of overcoming some of the stagnation observed in the development pipeline. Significantly, the TCPA has provided some much-needed leadership on this issue within its New Town Act manifesto with the idea of a revitalised development corporation delivery vehicle.

Finally, we need to think about the quality of life for residents and users of the new places we create. All too often the social and environmental components are seen as luxury bolt-ons to new developments. Yet, in reality, they need to be integral components of the mix from the start. Issues of climate change and health demand that we rethink how our cities, towns and countryside are designed and planned to avoid costs and disruption further down the line; flooding, drought and extreme weather conditions demand more proactive responses. These are all issues that will greatly add to the sustainability and liveability of our settlements.

At the heart of the housing debate lies the need for a culture change from agency and sectoral insularity to more cooperative and collaborative ventures across the built and natural environment professions and the wider public to understand, view and assess better the housing picture within the wider economic, social and environmental settings in which it sits. This is far from some academic navel gazing exercise, but rather a new set of discussions that have been missing from the current debate, which is becoming increasingly sterile and polarised as the election draws near. ■

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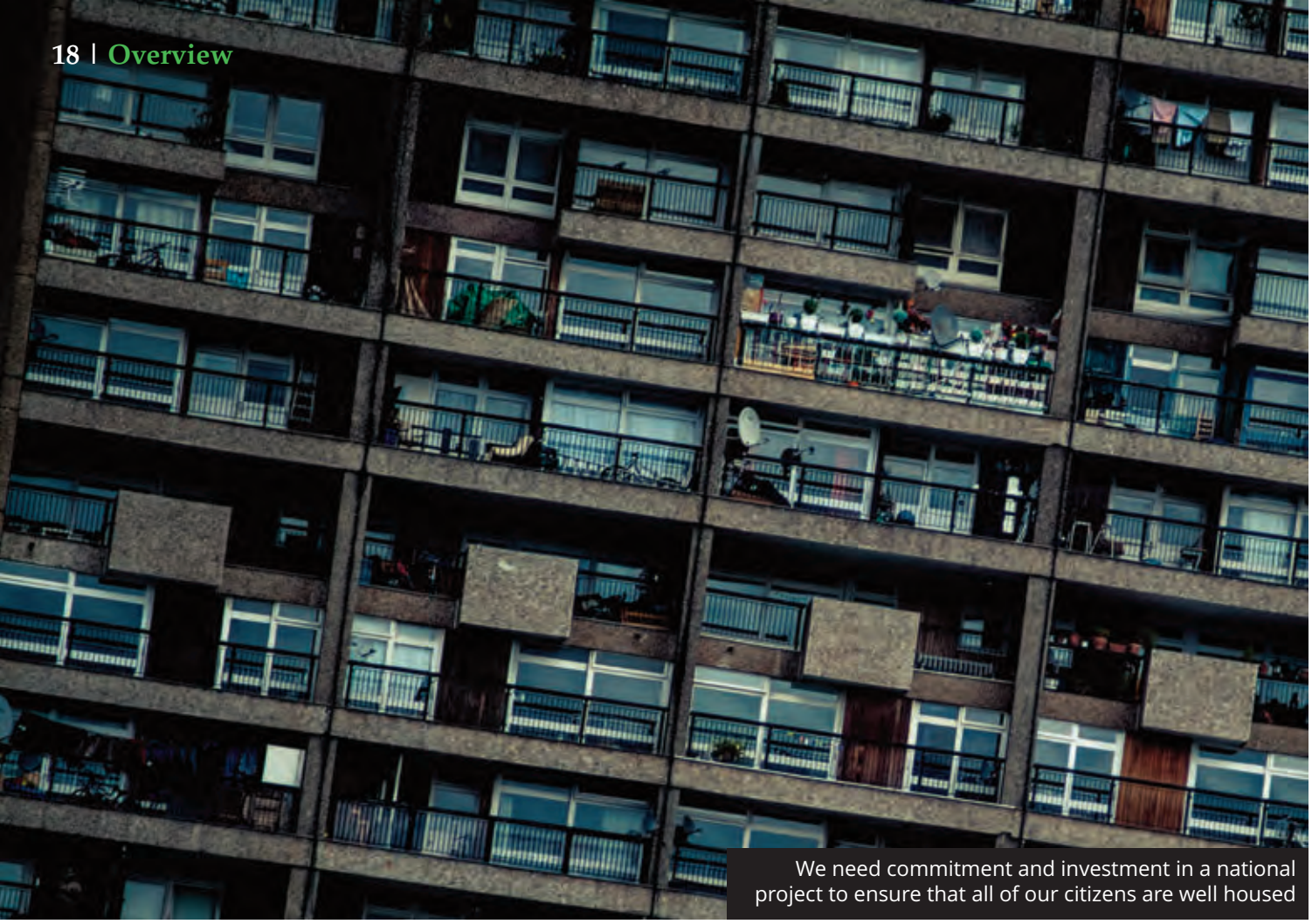

We need commitment and investment in a national project to ensure that all of our citizens are well housed

A housing wish list

David Orr, Chief Executive of the National Housing Federation details his top ten wishes for dealing with the housing crises in 2015...

It may be a bit of a cliché to write a New Year wish list but it seems to me that 2015 will be a critical year for housing. It is for this reason that I've complied my top ten wishes that could see the housing crises finally addressed.

1) There is nowhere else to start. We have to ensure Homes for Britain (http://homesforbritain.org.uk/) is THE campaign to be heard and noticed in the general election. If it is, my first wish will be fulfilled – that every political party will make a commitment to ending the housing crisis in a generation and will produce a long term plan on how to do it.

2) We will, of course, produce our own plan in the National Housing Federation and offer it to all the parties. So my second wish is that they all do the sensible thing and just adopt our plan.

3) I spent much of last year talking to politicians, senior officials and political advisers about housing. They all say that they recognise there is a housing crisis but there is no real sense that it requires urgent action. My third wish is that the whole nation wakes up to the reality of the housing crisis and the need for genuine urgency in tackling it. After all, we will fail to be economically and socially strong until we fix this mess.

4) The Homes for Britain campaign asks that our politicians commit to a long term plan. This can only happen if there is cross party support and a sense that this is the kind of major national project that

Homes for Britain
The National Housing Federation is part of the Homes for Britain campaign which for the first time brings the entire housing sector, from private developers and housing associations to architects and homelessness charities, behind one single clear message – to end to the housing crisis within a generation. They are calling on the next government to develop a long term plan setting out how they will do this.

needs cross party agreement. My fourth wish is that housing stops being a political football and becomes a genuinely shared endeavour.

5) The housing crisis exists everywhere, but it is not the same everywhere. This whole parliament has forgotten about regeneration: of housing, of local economies and of place. It has focussed almost exclusively on supply (and has failed even to deliver on that). We must not ignore the large parts of the country where regeneration is the answer. It may be too late to see much change in this before the election but my fifth wish is that we rediscover our narrative about regeneration and make sure it is part of the story.

6) Immigration has become the big public noise. It is a critical issue but the present narrative is distorted and is getting in the way of reasoned debate. We need to have the debate – and it is a valid criticism that we have sometimes ignored it – but please, for wish number six, let's keep immigration in proportion.

7) Everyone says that ending the housing crisis is too hard. It's not. We have plenty of land, a big pile of investment money looking for a home, and housing associations all over the country ambitious to make a big difference. Wish number seven is that we talk about the opportunities that come from new homes, not the problems and threats.

8) There will be a huge amount of debate about the NHS and about social care all year, especially in the run up to the election. Good quality homes are central to our health. Housing organisations have the potential to become key partners in imaginative responses to the demands on the NHS and on our social care provision. Wish number eight is that we see at least some of these partnerships move from small scale projects to large scale programmes.

9) I'd love to see some of our major media become more engaged in the call to end the housing crisis. Homes for Britain could be the perfect campaign for them. Others could follow the lead of BBC Radio Manchester and have a journalist dedicated to housing in the run up to the election. This wish, number 9, might be a stretch but it is that the Daily Mail signs up to Homes for Britain.

10) Proof of the pudding. If all of these wishes are delivered, wish number ten will just follow. The 2015 Comprehensive Spending Review will be the place where the years of reductions in public investment in housing stop. We will see renewed commitment and investment in a national project to ensure that all of our citizens are well housed and that this commitment is made to future generations too. ■

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New midfielder for planning team

It's been months since the last shake-up of the planning system. Instead ministers have been changing jobs in the departmental transfer window. We've lost Bolesy and have a new Minister for Planning – Brandon Lewis. While bums on seats have been shifting, there has also been a good deal of turmoil in the fraught world of planning tactics and strategy, to get Planning FC working as the Premier League outfit that it should be.

DCLG published an important consultation paper which picked up on 2013's temporary measures, on ideas thrown up by the autumn statement, Queen's speech and budget and on some crackpot notions that seemed like a good idea at the time.

Anyone who makes planning applications, or better still, employs Walsingham Planning to make them, needs to be aware of the proposals. It's a lengthy read, with few jokes, but it's important that the new proposals are understood if and when they are formally adopted.

A – New PD right to use light industrial or storage buildings for housing, subject to Prior Approval.

B – New homes from sui generis uses, allowing the residential use of launderettes, arcades, casinos and nightclubs.

C – Conversion of offices to residential to be made permanent, subject to Prior Approval, exemptions ceasing in May 2016 (GPDO – Class J).

D – The PD rights to extend houses by 8 or 6 metres to be made permanent, subject to Prior Approval.

E – Incorporate into Class A1 most uses currently in Use Class A2, excluding the government's bêtes noires, betting shops and payday loan shops, precluding changes to A2 from other uses.

F – The change of use from A1 (retail) to A3 (café/restaurant) is to be extended to include A2 uses and others, subject to prior approval and a size limit (150 sq m).

G – To allow A1, A2 or sui generis uses to change to D2 (leisure) use, subject to Prior Approval, excluding listed buildings or conservation areas.

H – To allow shops to have small curtilage buildings, bigger delivery doors and larger mezzanine floors.

I – PD rights allow temporary use of land or buildings for film locations.

J – Improved PD rights to allow photovoltaics on commercial buildings.

K – Greater expansion of shops, offices, factories and warehouses.

L – Easier replacement of plant and machinery at waste management premises.

M – extension of PD rights for sewerage undertakers.

A number of the above changes rely upon PRIOR APPROVAL. Prior approval is a relatively new player in Planning FC, slotting in between the strike-force of no development and the defensive line, development. As the team's new boy, perhaps a reminder of his CV is warranted.

Any judgement as to whether planning permission is needed starts with S55 of the 1990 Act. While there are a number of woolly definitions which allow LPAs to err on the side of development, S55 defines the two outer limits. In between, at the attacking end of our diamond midfield, is permitted development, not exempt under S55 but nonetheless allowed by the GPDO 1995. The new boy slots into the centre of the midfield. He is permitted development, but with the proviso that a) you have to tell the LPA that he is, and b) under certain circumstances, usually transport or flooding, the LPA can tell you that he's not.

Proposal C has been the most controversial, with LPAs using prior approval rejections and Article 4 Directions to forestall PD changes of use. Use of this controversial defensive midfielder has now been upheld by the Courts, although, once prior approval is conceded, the new changes will take away this line of LPA defence.

The government's usual approach to poor performances by Planning FC is not to grasp the nettle but to do a little judicious pruning, although, "at the end of the day", it is still a nettle. It might well be time for the govern-

ment to pull the thing up by the roots and plant something that does the job.

Prior Approval was not a player which the government wanted in the team when he became available. His introduction was forced on them, as a means whereby the measures of office to resi conversions and large house extensions were made acceptable. Now the whole team revolves around this midfield dynamo. He has become the halfway house between the defence that all development that requires permission and the attacking line where none does. It is a radical change to the system, arrived at by accident and against the wishes of the Manager.

Given that the changes introduced in the 2013 season have been in the team for barely eighteen months, the assumption that they deserve regular first team play is premature. Match results have been poor. That Prior Approval should now play such a big part in the game puts a new burden on the team, already strained to the limit by the tactical nonsenses of previous managers.

This consultation paper cannot be ignored. Apart from offices, the changes to promote housing in strange places is simply tinkering, but the High Street changes warrant serious consideration and strong criticism.

If you feel strongly, about any of the issues raised in the consultation paper and would like help from Walsingham Planning in making sure that you make the most of its opportunities, give us a call. The full text of this edited article can be seen on our website www.walsinghamplanning.co.uk

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Time to love bungalows again

Rural communities face an urban exodus if a sustainable solution to the countryside's housing crisis is not found. It is time for bungalows to be recognised as part of this solution says Henry Robinson, President at the CLA...

Since the 1940s, house building in the countryside has stalled. For decades, retirees looking to downsize have been left with nowhere to go. With no suitable alternative housing available to them, and reluctant to lose their support networks by moving into towns and cities, many older people have felt they have no option but to remain in costly-to-run family houses. Not only has this removed much-needed family housing from the market, it has debilitated rural services, limited rural employment and prevented rural employees living close to their place of work.

With Britain's aging population expected to account for 54 percent of households aged over 65 by 2021 and in rural areas, the number of over-65s rising 2.5 times faster than in towns and cities, this situation can ultimately only lead to the death of rural villages.

In the CLA's housing policy document 'Tackling the housing crisis in England' we clearly identify the need to enable elderly owner occupiers, retired rural employees and tenant farmers, to downsize as a key restructuring requirement within villages and offer up bungalows as part of the solution. A solution since echoed by Housing Minister Brandon Lewis.

Bungalows provide a smaller, easy to maintain and more manageable living space for older generations who do not feel ready to move into retirement housing. They allow older occupants to remain in the area they know and have contributed to, simultaneously freeing up larger, vitally needed family housing.

For decades, landowners have been frustrated with the severe and entrenched limits put on bringing forward land for any kind of rural development.

Henry Robinson, President,
CLA (Country Land and Business Association)

Where small housing units existed, it has paid to extend them as much as possible to cash in on the plot value removing them from the retirement market. Local authorities must look at issuing planning restrictions preventing them from being extended upwards or outwards meaning that they remain available for older people. The development of the new National Planning Practice Framework (NPPF) and National Planning Policy Guidance (NPPG) has been an arduous journey, but the results are finally beginning to deliver change. It is my view that the positive planning changes should be used to deliver new bungalows in rural villages.

"Bungalows provide a smaller, easy to maintain and more manageable living space for older generations who do not feel ready to move into retirement housing. They allow older occupants to remain in the area they know and have contributed to, simultaneously freeing up larger, vitally needed family housing."

There is still some stigma surrounding bungalows but this can be addressed with good design. The NPPG states that local plan allocations are relevant to all types of settlements and focuses in part on older persons housing, and with the re-launch of Building for Life 12, some of the well-deserved criticism of bungalows on aesthetic grounds can be put to be bed. This is because alongside the design policies of the LPA, the ubiquitous kit-built, pebble dashed, shallow-roofed bungalows of the past, should be easier to refuse.

The beauty of bungalow developments is that although they require bigger plots than two story homes, they are low-impact on the skyline in instances where the site is highly visible topographically. This is why we have identified deep pitched roofed properties of traditional appearance as appropriate in rural locations.

Don't forget, less than 10 percent of the UK land mass is covered by development activity – much less than many people believe to be the case. Despite the fact they are more land hungry, in view of our aging population time bomb, bungalows have a role to play in all settlements – not just rural. ■

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Public land for public good

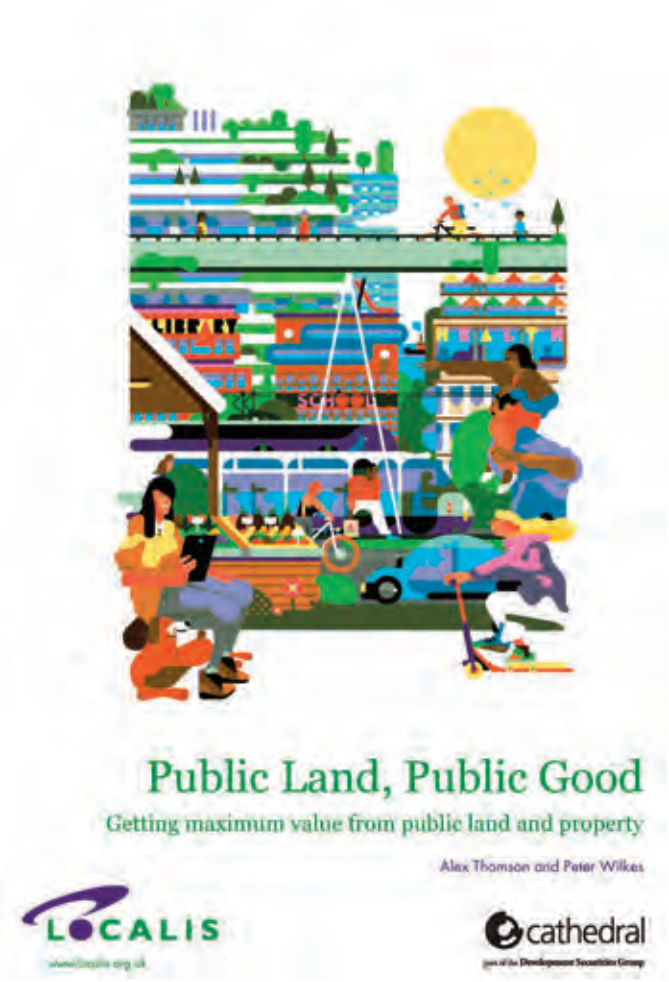
The time is ripe to reconsider how we use the substantial portfolios of public land, buildings and other assets held by central and local government believes Jack Airey, Researcher at Localis...

Our conceptions of the state – what it does, who it serves and how – form the basis of political dialogue. This was articulated in the debate which followed George Osborne's 2014 Autumn Statement. For the Office for Budget Responsibility and the Labour Party, the Chancellor is planning to drag us back to the 1930s. For the Chancellor's own party, his plans are the necessary course of action to realign state spending with national economic performance.

While there is no clear answer as to which side of the argument is correct, it is clear that the role of the state is shifting towards a smaller existence whereby it seeks new methods to balance its books.

With this in mind, the time is ripe to reconsider how we use the substantial portfolios of publicly owned land, buildings and other assets held by central and local government. In years gone by, this asset base has either been left dormant or slowly sweated away at less than best value. This is despite public land being just that: publicly owned.

Our 2014 report 'Public Land, Public Good' underlined the importance of achieving best value from the public



estate. With much of it suitable to both residential and commercial redevelopment, the report contends that as well as providing potential future revenue streams needed to sustain vital public services, reimagining our usage of public land also offers a partial answer to the housing crisis which currently engulfs parts of the UK.

In this respect, the coalition government has a good record. The report highlights a number of productive moves taken by the government to release surplus and derelict land for redevelopment. These included a rationalisation of the public estate; the enactment of the Buy Now, Pay Later initiative; and, most importantly the recent One Public Estate programme which seeks to encourage collaboration between central government and local agencies on land and property issues.

While all these policy developments are welcome, there is still the potential for much more to happen.

Indeed in our report we calculated that up to £2.3bn worth of local authority assets could be sold for less than their full value in the next five years.

Given both the parlous state of central and local government finances and the finite nature of public land, a fundamental shift in attitude is required in how we approach this asset base. There is clearly the need to move away from the mentality of simply taking one-off capital receipts, and instead look to maximise long-term revenue income streams and community benefits. This is not to say that the one-off disposal of land cannot be the right answer when the price is right, but that there are many more alternatives such as keeping the freehold and agreeing a commercial lease to generate an ongoing cash flow to consider.

Furthermore, thinking about public land in a much more rounded way, such as changing Treasury guidance to encourage public sector bodies to focus on long-term best value, will encourage authorities to act more as custodians of public land rather than simply disposers.

With local authorities planning to develop £13.5bn worth of assets over the next five years, it is clear that in the reformulated state of the future – be it akin to the 1930s or not – public land has a major future role in both housing delivery and contributing to the public purse. ■

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Planning for SuDs

Sam Ibbott, Deputy Public Affairs Director at Environmental Industries Commission examines the latest government consultation on SuDs and the new approach of delivering it through the planning system...

The photo-op, when staged, can be a politicians dream. If you follow politics, particularly at a local level, they can often be unintentionally hilarious – such as the classic pose of an MP crouched down and pointing at a pothole with a look of horror on his or her face as if the pothole had just said something rather untoward about their mother. So when the country saw widespread flooding last year it was unsurprising that MPs of all colours hastily donned waders and took the opportunity to get photos of themselves looking sympathetic next to people whose lives had at best been inconvenienced and, at worst, devastated by rising water levels.

Flooding is a national infrastructure concern, and with the issue so high in the public's consciousness it would have been an opportune moment to announce at least one practical step forward – the implementation of Sustainable Drainage Systems (SuDS). SuDS are the process of dealing with excess surface water by mimicking natural processes which slow the movement of water before it enters rivers or streams, or stores the water so it can either soak into the ground or evaporate. Not in themselves the answer to all flooding concerns by any means, but SuDS have an important role to play – particularly in an urban environment.

The independent Pitt Review on flooding, which first recommended the greater uptake of SuDS, was published in 2008 and they were formally legislated for two years later in the Flood & Water Management Act (2010). An initial consultation on their implementation (as required by Schedule 3 of the legislation) closed in early 2012, and two 'go live' dates were subsequently announced and later rescinded.

Then in September of last year the government went to consultation again with a new approach for implementation which intends to deliver SuDS through the planning system. The government published its formal response to this consultation in late December.

The consultation saw a diverse range of submissions from local authorities, water companies, property developers, consultants, community groups and trade associations (including the Environmental Industries Commission (EIC)). At EIC we raised a number of concerns, many of which were at least acknowledged in the government's response and/or subsequently dealt with to varying degrees. Chief among the issues we raised were that:

- The latest consultation document framed SuDS almost exclusively in terms of flooding, and did not take into account their potential impact on water quality;

- Whilst the consultation's focus on the ongoing maintenance of SuDS is welcome, hastily delivered but inappropriate or poorly installed SuDS have the potential for much higher maintenance costs in the long run;

- Local planning conditions have not always been effective in the past – with houses being built on flood plains for example;

- There is a potential loophole in the proposed exemption from SuDS requirements for 'micro' developments (fewer than nine properties) in that a major development could be reclassified as

numerous smaller ones. There will also be an onus on the local planning authority to monitor the cumulative impact of numerous micro developments in their area.

In a Written Ministerial Statement published alongside the consultation response, the government made clear their "expectation" that sustainable drainage should now be included as part of major new developments "unless demonstrated to be inappropriate" – which could, for example, be the result of ongoing SuDS maintenance not being "economically proportionate"; if SuDS were to impair the deliverability of the development; or if they were to place "an excessive burden on business."

Despite this, EIC welcomed the government's emphasis on a requirement for SuDS to be maintained over the lifetime of a development. Although the market in third party SuDS maintenance is relatively immature and there are potential difficulties in gauging the robustness of maintenance providers and their expertise, we feel it is an important principle to have set out from the start. There is in any case a suite of maintenance options for developers to choose from, allowing a level of flexibility in the methods by which this maintenance will be funded and delivered. Responsibility for putting an arrangement in place, whatever its make-up, however, remains the responsibility of the developer as part of the planning application process.

Responses to the consultation did however raise concerns over a lack of technical expertise at local government level, particularly in smaller local authorities, to determine the suitability of sustainable drainage proposals when assessing planning applications – which can lead to inconsistencies. Although not originally proposed in the consultation document as a channel for securing the required expert advice, the government has subsequently accepted that the Lead Local Flood Authority (LLFA) are well placed to provide advice on such issues due to recent provisions in the Flood and Water Management Act which gives these bodies overall strategic responsibility for local flood risk management, including surface water. The government now intends to consult on making LLFAs a statutory consultee for planning applications on surface water management.

These changes to planning will take effect from the 6th April 2015 and the government intends to publish revised planning guidance in advance of this date, in addition to engaging with local government on a capacity building programme.

By this time it will have been seven years from recommendation to implementation – far longer than had been hoped. The new approach of delivering SuDS through the planning system will likely see them delivered more quickly, if not automatically to a high standard given the disparity of resources and expertise within and across local authorities. It is the path of least resistance, but whilst not ideal it is workable and certainly preferable to even further delays by going back to the drawing board.

With an ever-increasing call for more housing to be built, and all political parties likely to make a related commitment in their general election manifestos this year, it is important to get SuDS regulations in place as soon as possible as our towns, cities, and urban spaces become ever more densely populated. If the result of a wider spread use of SuDS is fewer photo opportunities for MPs, that's a price worth paying. ■

EIC is the trade association for the UK's environmental technologies and services sector.

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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/ .

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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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Utility connections for new build projects

Utility Networks (UN) – a division of the Energy and Utilities Alliance (EUA) looks at how to avoid construction delays due to utility connection issues...

Organising utility connections is often cited as the single most common cause of delay in construction projects. The reality is that they have a better chance of staying on schedule when architects, consultants, contractors and developers factor in detailed utility designs much earlier. Utilities are often undervalued and brought in too late to the party which can have major consequences for all.

There are three big issues – the network connection, location of infrastructure, and metering, with some developers assuming or omitting certain utilities information. Early advice from an experienced company with technical knowledge and project engineers on the ground can cut costs, and ensure the vision of the developer is realised.

Network connection

If there are buildings around a new site that are already connected to the utility network, it is logical to think that those utilities can be branched out to your new site. But those existing networks may already be working to capacity - and if they are, there will be cost implications for expanding them. These are expensive questions if they are not tackled early on.

Then we need to consider the anticipated utility demand of the new development. The provision of an Ordnance Survey plan with an outline of the development, at best can only be a subjective calculation as to the required loads. This approach does demonstrate some forward thinking in terms of utility infrastructure needs but in reality it is comparable to licking one's finger to assess the direction of the wind; without specific details, such as the mix of domestic properties or the use of the industrial units, this approach is a guestimate.

Location of infrastructure

Firstly we have highways. From timing and location through to lane rentals, utility companies will know which roads to cross to ensure cost and time efficiency. Timing can be a factor here as well – there can sometimes be major difficulties trying to get permissions to work on roads at certain times of the year.

Consideration also needs to be given to the path and location of the utility infrastructure. Will it require easements or a wayleave? For example; electricity sub-stations require clear access for maintenance purposes, for which the Distribution Network Operator (DNO) will insist on this legal obligation being in place prior to making the supply and sub-station live. The industry is only too familiar with the frustration of developers when an easement is not in place in time, resulting in the properties having to be supplied by a generator.

Easements are now becoming more prevalent within the gas industry, where once it was assumed that wherever a gas pipe was buried in the ground that access to it was a forgone conclusion, this is no longer the case, and therefore Gas Distribution Networks (GDN's) are much warier of the location of their asset and the access they will be given for future maintenance and emergencies.

This has not been the case for water mains and services; they are just not laid in private un-adopted land, but rather metered from the property boundary.

This then moves the onus to the land owner to maintain those pipes downstream from the meter.

Metering

The biggest question here is where they should be positioned – particularly in multi-occupancy buildings or those with constrained meter locations – this can make a huge difference to connection costs and timescales.

The ideal location for a gas meter should be in a purpose built external cavity, surface mounted or multi box with suitable ventilation, on the front elevation or on a flank wall 2.0 meters from the front of the property. Also considered are specifically constructed rooms to the outside of a building or internal to the building but on an external wall for natural ventilation. Gas meters can still be located within a property providing it is well ventilated and on an external wall. Developers historically want to install gas meters in a semi-concealed ground box, but these are no longer suitable, mainly because they are not ideally suited to a smart meter installation.

Multiple occupancy dwellings and gas meters pose a different set of challenges, so early engagement with Utility Connection Providers (UCP's) is crucial for those developments.

Water is fairly straight forward, most meters are housed in the boundary or stop-cock box. However there is a move to use what is known as a 'ground breaker box' which is located on a wall of the property that has a stop-cock and meter within.

As for the electricity industry it is more or less a given that meters and associated apparatus will be housed in a recessed cavity box, unless the dwelling is of a multiple occupancy where a suitable cupboard or dedicated room will need to used.

Engage with us early

The point at which it becomes viable for the Utility Connections Providers (UCP) to design the utility infrastructure is when planning permission has been granted. At this point the UCP's will have knowledge of the loads and flows required for the development.

It is crucial that utility providers are engaged at this point as there is much to consider with respect to legislation, codes of practice and industry standards.

There are plenty of resources where information can be obtained; the DNO's and the water industry all have their requirements for design available on their individual websites. For gas it is a little more difficult due to competencies and regulation, and the codes of practice have to be purchased from the Institute of Gas Engineers and Managers. That said, UCP's are more than happy to help and guide developers to solve their problems. A list of these providers can be found on the EUA web site.

It is also important to ensure also that a Lloyds accredited company is engaged, it is your safeguard to know that they are competent.

Remember, it is never too early to plan but it can so easily be too late! ■

EUA Utility Networks

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The missing link in property and construction

How do we get more women into property and construction? Elspeth Burrage, National Chairman of the Association of Women in Property believes that we need to get them while they're young...

This has become widely accepted as the 'missing link' in the drive to encourage more girls to consider a career in the industry. While we make no apology for targeting girls, after all women still only represent 15% of the industry workforce, the same applies to many boys too, particularly those who aren't from an independent school educated, white, middle class background. Unfortunately, it appears that the majority of schools' careers services still don't have a good understanding of the tremendous scope offered by the industry, for girls and boys.

Our National Student Awards winner this Year, Jessica Dowdy, who is studying Construction Project Management at Oxford Brookes University, said, "As a student in an all-female independent school, I found it astounding to know that I was the only person in my school's history to choose a construction-based degree."

The message just doesn't seem to be getting through. Anecdotally, through the Women in Property National Student Awards and backed up by the findings of Property Week's recent Open Plan survey on diversity, our undergraduate Awards finalists speak of finding out about the industry 'by accident', or through a family member already in the sector. If property is on the careers agenda at school, it has been offered to boys in the form of bricklaying and girls via estate agency. Nothing wrong with either of those but look what they're missing.

WiP has years of experience visiting schools to talk to students about the options available to them. We create lively, engaging events in a bid to inspire an interest at an early stage, an interest that will translate to appropriate GCSE, A level and degree choices. Get this right and those young people are well on their way to knowing how they can take their careers forward.

Practical intervention

With our limited resources and the generosity and goodwill of our member volunteers, we tackle the issue at different stages in the educational process. Our South East branch runs a wonderful site visit and interactive session, called 'The Ladies Bridge'; this takes a whole Year Group of 11-12 year old girls and boys from the Lilian Bayliss School in Lambeth, to Waterloo Bridge, built predominantly by women during WW2, hence the nickname adopted by the watermen on the Thames at that time. They hear from property and construction professionals – our members – how bridges are built now, who's involved, what's involved. The initiative is now in its 5th year and has received an accolade from OFSTED. Better still, the children, many of whom are from challenging backgrounds, love it. This sort of information simply would not have crossed their radar without the forward thinking attitude of their school and the commitment of the professionals involved.

Our South West branch has been running a Schools Competition for four years, this time targeting older children in mixed schools, in Year Ten (14-15 year olds), who are presented with a brief to design a sustainable home. Crest Nicholson has been generous in its support, offering a 'virtual' site on a real development in Bristol, so the students have something tangible to work with. The project is worked into the curriculum and the different professional disciplines explained,

Continued on page 36...

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The Ladies Bridge, run by the South East branch

Continued from page 34...

allowing the students to understand what, for example, a planner, an architect, a surveyor, and engineer all do and how their roles come together on a construction project.

We also work with undergraduates. While they will have made their career choices, they are not necessarily equipped for the world of work. Again, through our branches, we get involved with Universities to help their students become 'employer-ready'. Our National Student Awards scheme gives all entrants invaluable experience of presenting and interacting with senior industry professionals. The Awards also offer students access to potential employers through work placements, while national finalists have the opportunity to join WiP's Mentoring Programme.

We run Speed Interviewing and CV workshops for Built Environment students at the University of Westminster, which are hugely enlightening for both undergraduate and postgraduate students who don't necessarily see themselves in the way an employer will. We have had extremely impressive Student Award finalists who would not have reached the 'final cut' if the judges were relying on their CVs alone.

All of these different initiatives work really well for the few young people we are able to reach. Our greatest problem is resource. We are reliant on volunteers who have to juggle their hectic work schedules alongside their commitment to these young people. In addition, there is inevitably a financial cost; the Ladies Bridge would be a superb exercise to roll out across the UK but we would need funding to do so. Needless to say, we would be pleased to partner any organisation that would like to do its bit to encourage a wider cross section of youngsters into the industry. ■

Elspeth Burrage
National Chairman
Association of Women in Property
www.womeninproperty.org.uk
www.twitter.com/WiPUK

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Making business improvement enjoyable and sustainable

Benefitting from business process management

The only constant in business, private or public, is Change; and most people whether they admit it or not do not like change enacted upon them. It is therefore important as you approach designing and implementing a Continuous Improvement (CI) programme that you fully recognise and manage the change aspects. Continuous improvement is not a new concept, well promoted in manufacturing businesses; it requires intensive teamwork with team members that have the delegated responsibility to improve the processes they are part of.

Leadership is key in selling the vision of the future beyond the proposed improvements and designing a reward and recognition scheme that has a personal dimension to it. Change Management is multi-dimensional including education and training, business process modelling, and communications. All of these elements are then designed to match the organisational culture.

External Intervention and facilitation can be effective, in challenging the status quo, providing analysis tools and programme management; but sustainability can only be achieved from within and enthusiastic participation can only be guaranteed if the process is enjoyable.

Making this process enjoyable requires that you ensure that each of the participants:

- Has a sense of control over the outcome.

- Understand their personal benefit.
- See how they will improve their skills making them more employable inside or outside the organisation.
- Receive recognition of their achievements through the monitoring of benefits and the difference the change has made.

Why does this make it enjoyable?

Firstly, if you can see and feel in control of your own destiny you are more likely to participate in changing it. This means leaders need to be able to project a vision of where they think continuous improvement is going to take the business, and then what part the participants will play in it. Leaders also need to emphasise and promote the personal benefits such as training as well as monetary rewards.

For example demonstrating that by participating in programmes such as this so they can progress within the business and in some cases this progression might be significant enough that they move out of the business into a new career.

Sustainability requires that the business:

- Provides a strategic framework in which continuous improvement is managed through process improvement targets set over a 3-5 year period.
- Provides for the monitoring of these targets as part of departmental 'business as usual' activities.

- Continues to provide training in analysis, communication and decision making skills perhaps using the early practitioners to develop others.

- Communicates regularly describing how the business is progressing and the contribution from CI.

What are the key elements of a successful CI programme?

We consider the corner stone to be a dynamic business process model. By understanding the present maturity of the processes, comparing to best practice provides the 'Gap' that must be closed by the CI programme. We debate process performance in a qualitative manner in cross-functional workshops. The maturity of these processes will vary and this will lead to different categories of improvement such benchmarking, step change and break through.

When redesigning processes we take into account that different processes have different values within the business, therefore there should be little discussion about streamlining activities and removing rework from back office processes and can be set to a 'best practice' standard; whereas 'added value' processes need careful design to ensure we deliver the most beneficial outcome.

The benefits model of the continuous improvement programme will directly be related directly to these processes also. Executive workshops enable senior managers to define the type of benefit and the degree of difficulty to achieve it. We use 3 categories Displaced Costs, Improved Productivity and Increased Revenue; and three degrees of difficulty High, Medium and Low to enable mangers to allow for the level of control they have in implementing the process improvement. This qualitative method engages managers better than traditional single target benefit measures.

Throughout a CI programme a significant level of honest communication is required, all stakeholders need to be understood and communication will vary from results notification to visioning. All the communicators will need to have a good level of skill and be able to address their work colleagues and senior managers in equal measure.

This ability requires structured training and to ensure good 'internalisation' of change we use workshops to engage the change agent in all participants; other skills training will include the ability to communicate with colleagues, facilitate workshops and present analysis and assessment results to senior managers. The senior managers role in this is to be listening, facilitating and mentoring, guiding; not managing and implementing.

In Summary

Throughout the next 12 months we will be looking at some of these techniques and approaches in more detail, but in conclusion the implementation and management of a successful continuous improvement programme requires good planning, a shared vision of the future, skilled internal change agents and extensive open communication.

We hope that we have shown that the human element is the key issue in the whole process; take your staff with you. In addition do not think you can delegate the whole process to outside agencies though they can help to provide tools and techniques and create initial momentum. For example there are many examples of where a change have been made without performing business modelling and in some cases this has resulted in extremely effective, short term cost reductions in head count, but an inability to perform the processes effectively after the programme stops.

Finally CI should be seen as redirecting your resources to add more value in activities that you may not be able to perform effectively because they are either not recognised, there is not enough resource in the business to do them or they are being protected by departmental approaches to process design and management that are ineffective in today's agile business climate.

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Archaeology for all?

Dr Mike Heyworth MBE, Director at the Council for British Archaeology assesses the current situation of archaeological services in the UK and the vital role it plays in our heritage...

A survey undertaken in 2012-13 showed that over the previous five years, the number of archaeologists employed in the UK had dropped from nearly 7,000 to under 4,800 – a 30% decrease. This mirrored the reduction in development and building work at that time. Now development-led archaeology is booming once again, and the larger archaeological contractors are all advertising for more staff to fulfil the demand for their services.

This is good news for archaeologists, but also good news for everyone with a passion for British history and archaeology. It is also good news for developers who appreciate that they have a responsibility to enable the recording and understanding of the archaeological heritage which will be damaged or destroyed by their development. They also realise that this is part of the risk management strategy for their development, ensuring that there are no surprises during the building work when previously unknown archaeological remains might otherwise be uncovered and cause unnecessary delay and cost for the developer.

The system which is in place across the UK to allow archaeological work to be specified as part of the planning permission given to developers, relies on the planning policies in place in the constituent parts of the UK. In England, the National Planning Policy Framework gives a clear steer on the planning system's expectations for archaeological work to be undertaken in the public interest.

Yet the implementation of this system relies on expert advisors working within local authority planning services who can assess proposed developments for

Image: Oxford Archaeology

archaeological implications, consulting the Historic Environment Record which they maintain or have access to. Without these advisors it is always going to be hard for local planning authorities to carry out their responsibilities as there are specialist skills and considerable expertise involved in making judgements about the archaeological potential of development sites.

So it is of considerable concern that ongoing public sector funding cutbacks which are having an increasing impact on local government are in some areas now eroding the expert advice available to the planning authority. A report produced in July 2014 indicated that across England there were 300.5 FTE posts providing advice to local authorities – a drop of nearly 10% in twelve months and a drop of 26% since 2006.

Continued on page 42...

CAMBRIDGE ARCHAEOLOGICAL UNIT

Archaeological services include:

- Pre-planning advice
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- Evaluation
- Excavation
- Public outreach
- Post-excavation analysis
- Survey
- Historic Building Recording
- Consultancy

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

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

Contact details:

Tel: (01223) 327802

Fax: (01223) 314686

Email: cauadmin@arch.cam.ac.uk

Website: www.cau.arch.cam.ac.uk

REGISTERED IFA ORGANISATION

UNIVERSITY OF CAMBRIDGE

Image: Museum of London Archaeology

Continued from page 40...

The concern about this drop led the Culture Minister Ed Vaizey MP to commission a report on the situation in 2014. He asked John Howell MP and Lord Redesdale – two parliamentarians with archaeological qualifications, and both members of the All Party Parliamentary Archaeology Group – to undertake research on the problems and look for innovative solutions. Their call for evidence solicited nearly 80 responses – many of which called for a statutory duty to be placed on local planning authorities to ensure that they maintained or had access to a dynamic Historic Environment Record – the database of all known archaeological evidence in the area – to inform planning decisions. Many respondents argued that this was necessary to protect these vital services against the threat of greater cuts in the coming years.

The report of the inquiry is to be published soon by the Department for Culture, Media and Sport. It is to be hoped that it will be accompanied by a strong government statement which reiterates the importance of the archaeological advice services and the HERs across the country. In Wales, a Heritage Bill is due to be introduced into the Senedd for debate in the coming months and is likely to include clauses to give statutory status to HERs in Wales. Similar legislation may soon be needed in England and Scotland, or we may see a return to the bad old days of 'rescue digs' which were often undertaken at short notice while developments were in progress and were inevitably inadequate as a consequence and potentially extremely costly for developers.

There is considerable public interest in history and heritage across Britain and no-one likes the idea of unique and valuable knowledge being lost through development work. The vast majority of developments have no archaeological implications and less than 5% require an archaeological condition associated with the planning permission. The key thing is that we sustain a network of advisors and the knowledge base that they rely on to ensure that everyone benefits from the information that is gleaned from appropriate and proportionate archaeological investigation work. This is very much in the public interest and a key foundation of the heritage protection system in Britain – not blocking change, but ensuring that change is informed and enlightened: providing archaeology for all – and of course, less risk for developers.

Council for British Archaeology

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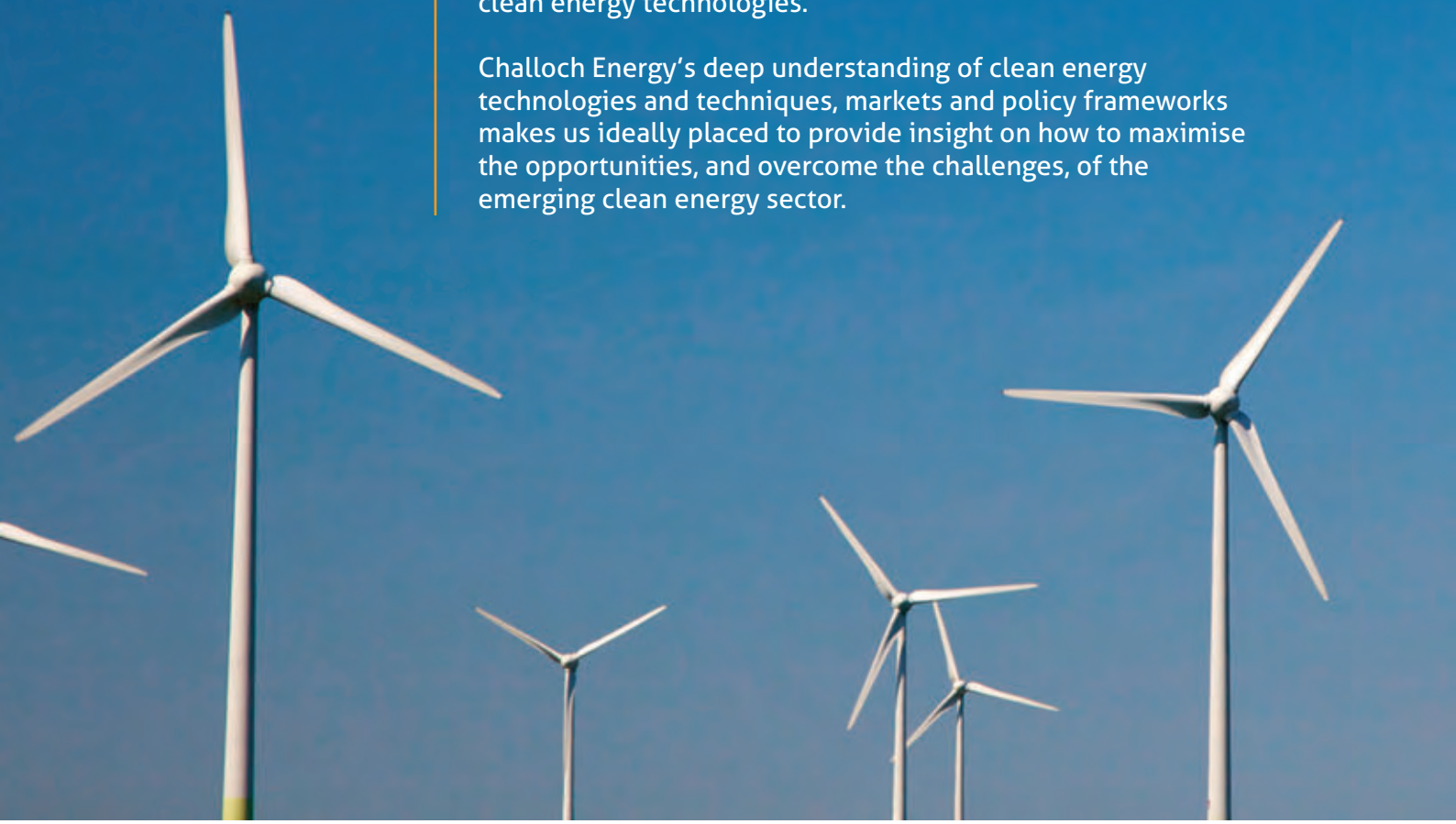
Challoch Energy believes that societies need a mix of energy efficiency, CHP and Renewable Energy meet the challenge of massive reductions in Carbon Dioxide emissions. Whilst technological innovation is necessary to bring forward new and improved technologies, much can and should be done with existing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

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



Challoch ENERGY

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...consultation, conversation and discussion are vital elements of our development process

Completing Level 2 BIM

Stephen Hamil, Director of Design and Innovation and Head of BIM at RIBA Enterprises details the development of a digital toolkit which will guide industry to complete Level 2 BIM...

In September of last year, a team led by NBS, with colleagues from BIM Academy, BDP, Laing O'Rourke, Mott MacDonald, Microsoft and Newcastle University, was awarded a £1 million contract from Innovate UK to develop a digital toolkit to complete Level 2 BIM.

Put simply, the project involves devising a standardised and digitally-enabled classification system and a digital plan of works tool. This will create a unified, single classification system for use within construction, and will provide an easy to use web portal which guides users through the construction process.

The digital toolkit will be free to use and will be delivered in the spring of this year in advance of the 2016 deadline for collaborative 3D BIM, with electronic project and asset information and documentation on public sector projects.

Collaboration is at the heart of BIM and at the heart of the toolkit. As David Philp, Head of UK BIM Task Group, said in this publication at the end of last year, BIM is a behavioural change programme more than anything else and the industry runs a risk of getting side-tracked by almost endless technical discussions. It's also important to remember that computers don't collaborate, people do, so consultation, conversation and discussion are vital elements of our development process.

The digital toolkit will be fit for purpose right across the industry, including all disciplines and all scales of projects from large infrastructure schemes to small,

Stephen Hamil, Director of Design and Innovation and Head of BIM at RIBA Enterprises

domestic scale works. It will also be intuitive so that individuals at all stages of BIM adoption can use it – otherwise how will adoption become more widespread?

Discussions with architects, contractors, engineers, clients, manufacturers and facilities managers have reiterated that there's a real need for this initiative, which makes the team hugely optimistic that it will be used in the private sector as well as public because it's just a smarter way of working.

At a recent roundtable held at NBS Live, the widespread view was that, although everyone's current processes allow projects to get built, there are many holes in these existing methods of working. It's these holes that the digital toolkit aims to fill, providing the missing pieces of the BIM jigsaw.

The first piece, the classification system, will be a new version of Uniclass which will be based on the international ISO/DIS 12006-2 framework. This will build on the work NBS have already carried out over recent years under commission from the Construction Information Committee (CPIC). By completing this, the industry will have a unified structure which will provide mapping and guidance so objects can be configured at a project level to have the correct multiple classifications where required.

Some 5,000 templates will be developed, setting out guidance for Levels of Detail (LOD) and Levels of Information (LOI) for construction objects. Initially these will be spaces, systems and products for architecture, building services, structural engineering, landscape design and civil engineering. These will be freely available online and will also be available in both IFC and MS Excel format. These will form the "construction language" that all project teams can use to define their information exchanges for a particular stage of a project.

The second piece, the digital plan of work, will enable the project leader to clearly define the team, responsibilities and an information delivery plan for each stage of a project, who, what and when – in terms of documents, geometry and property-sets.

Over the next few months the project team will continue conversations with representatives of all disciplines and will be asking for feedback on progress. To assist this, events, webinars and seminars will be organised by NBS in partnership with the professional bodies that sit on our steering group.

The digital toolkit is for the whole industry and to have the greatest chance of success, we want it to be developed by the industry. To get involved and to keep up with latest developments, please visit the NBS website (www.thenbs.com/bimtoolkit) and the NBS BIM Toolkit and Digital Plan of Work Discussion Group on LinkedIn (https://www.linkedin.com/groups/NBS-BIM-Toolkit-8199514?home=&gid=8199514&trk=anet_ug_hm). ■

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Lloyd's Register Awards
BIM Accreditations

Lloyd's Register (LR) is pleased to announce the award of the first two BIM Level 2 accreditations as part of their pilot BIM capability accreditation scheme programme in support of the UK Government initiative requiring all contractors seeking to participate in UK public construction contracts to be 'BIM Ready' by 2016.

AEC3 and edc both participated in LR's pilot BIM Capability Scheme programme and have subsequently been awarded BIM Level 2 Accreditation.

LR carefully chose the organisations with which to pilot the BIM accreditation process because it would serve as a test bed and learning process for all parties involved.

With its extensive experience of national and international BIM projects, AEC 3 served as the ideal organisation with which to perform the pilot. Furthermore the Director, Nicholas Nisbet, is a recognised authority in his field, having been involved with the development and implementation of BIM since 1977, during which time he has contributed to the UK construction strategy and the industry response, and served as co-author of COBie, BS1192:2007, and the BS8541 series on construction product data.

The assessment of AEC3 culminated in the accreditation of their BIM Business Systems for the following scopes of work:

- BIM Object Provider/Originator
- BIM Project collaboration software Systems Service Provider

LR's second BIM accreditation certification has been awarded to edc, an Engineering Consultancy Provider based in Cork and London. The Consultancy provides mechanical, electrical and sustainable engineering design services to the construction sector and their assessment against the scheme requirements provided a broader perspective against which to test the rigour and validity of the BIM capability scheme.

edc were awarded BIM level 2 Accreditation, for the category of Engineering Service Provider and the scope of work of:

- BIM Object provider /Originator

The BIM capability scheme assesses and accredits organisations as meeting the UK Government's BIM level 2 requirements as defined in PAS 1192-2 and also business best practice incorporated from our other accreditation schemes involved in construction, asset management and Utilities and the assessment of the collaborative culture essential to the successful delivery of BIM projects.

The BIM capability scheme assessment comprises a two stage process:

- Gap Analysis
- Full BIM implementation audit

The gap analysis comprises interviews with key staff at the locations for which accreditation is sought, to gain an overview of the processes, procedures, competencies, IT strategy and software tools which support BIM related activities. A detailed report is issued following the gap analysis detailing weaknesses and gaps relative to scheme requirements.

Award presentation to AEC3 at the BSI BIM conference, London December 2nd. Left to right Terry Mundy, (LR) and Nicholas Nisbet (AEC3)

Nick Nisbett, Director of AEC3 said of the accreditation process:

"We are delighted to be the first company to gain LR accreditation in BIM, both for AEC3 and for our customers who benefit from competently developed, efficient, repeatable and checkable project and product information. Everyone from manufacturers through to clients need to move away from informal and error-prone craft methods. Accreditation shows AEC3 is leading the way".

Award presentation to edc in London January 2015. Left to right Terry Mundy (LR) and Eamonn Drummond edc London Operations Director

Richard O'Farrell CEO of edc said of the accreditation process:

"We found the assessors to be helpful and productive, yet objective and constructive when required. It was a pleasure to deal with Lloyd's Register and they were extremely professional in all our dealings. The level 2 certification will help edc maintain their position as BIM industry leaders"

Lloyd's Register Energy

When the organisation subject to assessment confirms that all such reported gaps and system weaknesses have been addressed then a full BIM implementation audit is undertaken, wherever possible on a BIM related project, to ensure full compliance with scheme requirements.

The principal areas of assessment are as follows:

- Organisation and structure
- BIM related training and competency
- Configuration management
- Subcontracting arrangements
- Risk management
- BIM process control
- BIM performance monitoring and improvement

For information on the scheme please access our website page:

http://www.lloydsregister.co.uk/schemes/building-information-modelling/

Or contact:

Terry Mundy
Business Development Manager
Tel: 07712 787 851
Email: terry.mundy@lr.org

BIM – where will the product information come from?

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

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

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

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

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

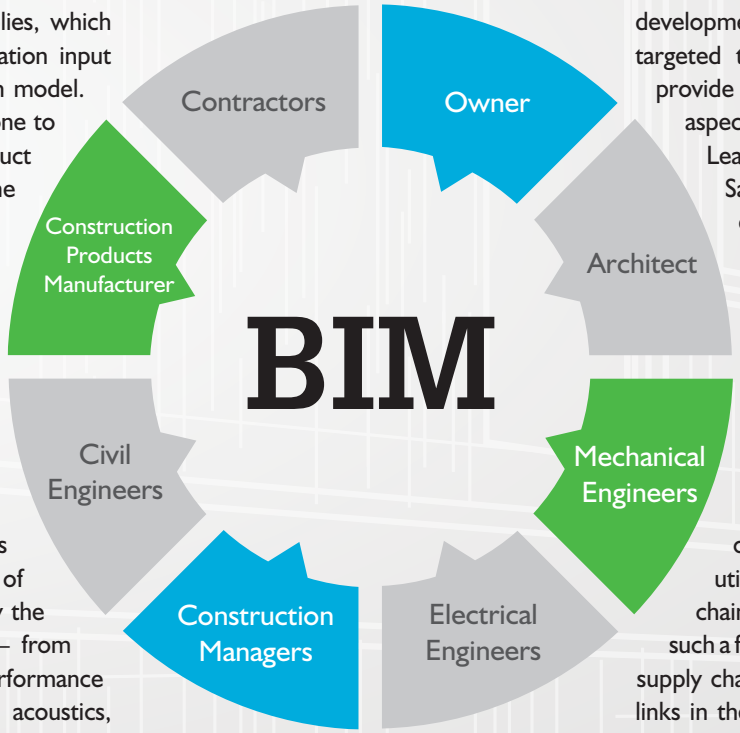
Image showing on-site temperature measurements being taken as part of whole house test programme.

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

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

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

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



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

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

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

SAINT-GOBAIN

BIM and GIS: A harmonious future?

Dr Anne Kemp, Chair, BIM4IUK enthuses about the potential of blending the BIM vision with that of geographic principles and how it could be utilised to deliver major infrastructure projects...

I believe that the convergence of BIM and geospatial in delivering major infrastructure projects is a game changer. But it will only be so if we understand and adopt a more holistic approach. And we can only do *this* if we consider the wider philosophy and approach of BIM and geospatial, rather than simply their tools and technologies.

The UK Government BIM programme is driven by the principle of managing information across the whole life of an infrastructure project, starting with the end in mind, and continuing forward to managing information across the whole infrastructure portfolio – with projects serving the needs of the wider context. That context may be a single organisation, such as Thames Water, Crossrail, Highways Agency, National Grid or Vodafone – but the real prize is if this can work across the whole of the UK's infrastructure.

I am a geographer, just finishing two years as chair of the Association of Geographic Information. Consider the brand straplines of AGI – "championing the value that the intersection of geography and information has for the economy, business and for the individual", and of the Royal Geographic Society (RGS) – "...the place for all those who want to know more about our planet and its people". I have been working in the AEC industry for 25 years, and serve as the Chair of the Institution of Civil Engineers' BIM Action Group, and of BIM4Infrastructure UK. Throughout my career I have been striving to make the right and relevant information available to the right people at the right time to stimulate thought and to facilitate better decision making. What fascinates and excites me about the potential in blending the BIM vision with that of geographic principles is the convergence of how we design and manage our physical infrastructure – both man-made and natural – with the human dimension. We can do this if we achieve collaboration across professions – but we need to cross the boundaries which exist between disciplines and between industries.

I reflect that what gives us so much angst is what we believe or interpret to be "right", and it is here that perhaps we make the most mistakes. For each of us, our behaviours and our outlook are governed, often unconsciously by our background – our culture, our education, our discipline, our profession. And this can lead us, intentionally or not, to reject valuable and relevant approaches, data and information from sources which we are not familiar with, or we don't trust. Time and again I have seen barriers to sharing valid and insightful data or ideas arise through differences in professional language and approach.

Both geospatial and BIM technologies are there to serve data from disparate sources into a common pool in such a way that it can be trusted and understood by people from a range of backgrounds, disciplines and skills. The art and science of cartography has evolved to portray the real world in 2 dimensions, in a way which enhances and clarifies understanding. There are good and bad examples of where this discipline has been carried into GIS. There are many lessons to be learned about the dangers which can occur if information is inaccurate, incorrect, distorted, manipulated or mis-represented. And where an individual's privacy can be invaded by inappropriate integration and sharing of pertinent datasets. We

must carry these lessons forward as we extend our use of digital technologies to convey our understanding and interface with the world around us.

Every physical thing has a place and a given state and context in time. Our moods can be tracked through time and space – and the way we are impacted by, and adapt, to the world around us. As we move forward, and integrate the internet of things and of people with the physical infrastructure which we plan, design, construct and maintain, so will we enhance our understanding, and our ability to monitor, guide and control our behaviours and interaction with the man-made and natural environments which make up our planet. As planners, the socio-economic dimension has always played a part in the consideration of projects. But as we see a convergence of our physical world with the virtual world delivered through our mobile devices, so I anticipate the psychological dimension requiring more and more attention (see Susan Greenfield's "Mind Change", 2014, for more information). Furthermore, the amount of information which our senses receive, whether within the work environment, or within our day to day living, has been increasing rapidly. But information is not understanding, and we need to ensure that each of us is empowered and equipped to challenge the information which is served to us.

We need to ensure that BIM and GIS provide us with the information and the tools to enable us to interrogate, question and challenge the scenarios presented to us – and to allow us to make wise decisions which build on and complement the intellectual and analytical power which artificial intelligence will increasingly present to us.

So this is where I believe the convergence of BIM and geospatial can take us over the next decade in improving how we manage and interface with the outcomes of our major infrastructure projects. And while much has changed, we have a long way to go. There are arguments that the vision of the internet of things has not been realised because of the lack of standards. But there are more fundamental things missing before we are ready for that progression. In the UK, our ability to record and maintain a comprehensive dataset of our buried infrastructure is hindered – not by technology – but by lack of policy and process. If as a country we really want to realise the vision of Digital Built Britain, then we must as an industry pull together and make this happen. Without doubt, there are problems around security. Without doubt there are challenges with standards. And without doubt there are issues around education and training. But what we really need is agreement – an understanding, and galvinisation around a common framework which can allow us to take this next important step, integrating both geospatial and BIM practices toward a coordinated, comprehensive and integrated model of our underground world equivalent to that above the surface. A number of activities are underway to seek to achieve this. Do get in touch if you would like to find out more. ■

ICE is working in a number of areas to enable this, and would be keen to know of others who have an interest in this area.
If you are, please contact Richard Armstrong on 0207 665 2411 richard.armstrong@ice.org.uk Information Systems Panel, Geospatial Engineering Panel and BIM Action Group secretariat.

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Amec Foster Wheeler:
Environment & Infrastructure Europe – BIM

Amec Foster Wheeler Environment & Infrastructure Europe progressed the adoption of BIM through 2014 as part of a standard approach to project delivery and data management within the architectural, buildings and civil construction sectors.

With the mandating of BIM Level 2 on all government projects by 2016, we have seen a substantial increase in public sector infrastructure projects requiring evidence of BIM capability within the PQQ stages of project bidding. Although the focus is on public sector projects, it is widely recognised that BIM will become the default way of working, a shift equivalent from drawing board to computer aided design, and an expectation for all consultancies to have BIM capability.

Amec Foster Wheeler E&I Europe BIM Strategy

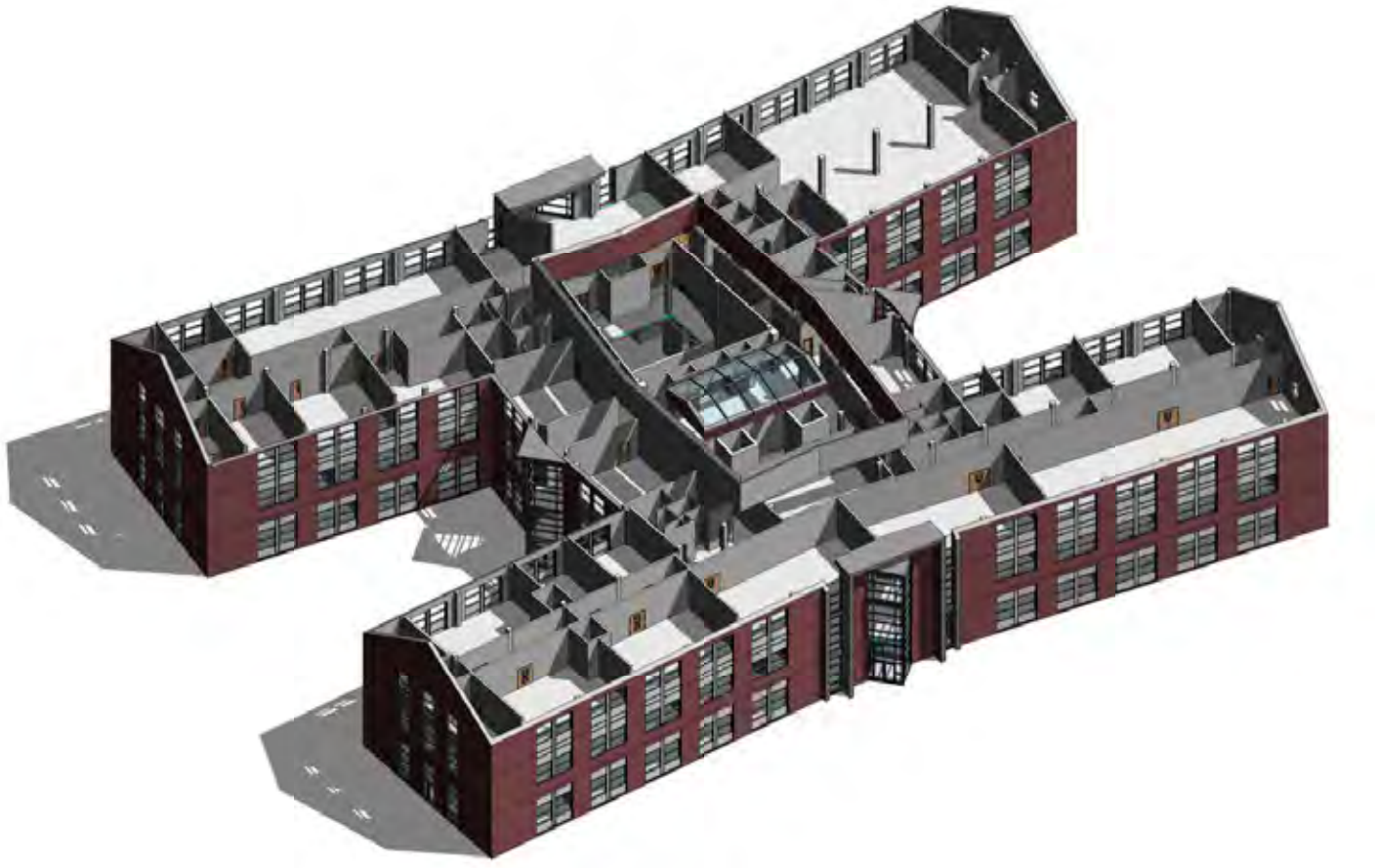
Our short term strategy set out to meet both the requirements of the BIM Level 2 mandate in line with PAS 1192-2 and 3, and the cultural changes required to ensure BIM is fully engaged and adopted sustainably within our business. The objectives of our BIM strategy identified the following critical success factors:

- Understanding the BIM requirements of sectors and clients
- Change management within project teams
- Project delivery processes
- Technology requirements
- Staff knowledge and training
- On-going research and development

To begin the process, we formed a BIM Implementation Team which included external BIM consultants and global software partners to propose a roadmap outlining our transition into BIM describing short, medium, and long term goals. As part of our strategy, the BIM Implementation Team identified trial projects within the waste infrastructure and defence sectors to test our delivery process and software solution. These trial projects are allowing us to review our documentation and evaluate our common data environment (CDE) data management and software solutions, as well as critically appraise cultural and project delivery processes.

Learning from other sectors – Integrated Engineering & Design (IE&D)

It is accepted that alongside the government mandate, a fundamental business driver for adopting BIM is adding value to a client's



project by producing higher quality deliverables and reducing inefficient working. During the BIM implementation period, our Global Applied Technology team have aligned our BIM strategy and project processes with the business's wider culture, creating efficiencies through learning from experience within other sectors.

For many years in the oil and gas sectors, Amec Foster Wheeler has seen technology as a key enabler for Integrated Engineering & Design and data driven-engineering, which effectively translates to BIM Level 3 in the built environment. Data centric engineering focuses on electronic workflows and controlled automated data, which means that document production becomes a by-product of the database.

As well as the technical similarities between data-driven design and BIM, the oil and gas sector has addressed the 'people' aspect of adopting new processes, through regular communications ensuring those involved understand the systems, workflows, and roles within the project process.

Amec Foster Wheeler E&I Europe BIM Future

Our commitment is to ensure our BIM capability will encompass the full asset lifecycle from concept through to decommissioning and demolition. All engineering, design, and analysis activities will be object oriented and closely integrated, while the assurance and handover of information and documents to downstream activities controlled using the latest database technology. Procurement, construction, cost and schedule management through to operations and maintenance activities will be integrated around the same coherent data model ensuring accuracy and consistency during all projects.

Building upon our current experience and proposed BIM processes, the adoption of information centric technologies, common standards and collaborative behaviours will continue to unlock new and more efficient ways of delivering as we head towards 2016 and beyond.

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The Leica Geosystems BIM Field Trip

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Leica Geosystems

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The 2014 BIM message

As we enter another busy year for BIM processes, PBC Today outlines some of the key messages from 2014 by David Philp...

2014 was undoubtedly a busy year for the UK BIM Task Group, and with the 2016 deadline looming for all centrally procured projects to use Level 2 BIM, 2015 will witness ever-more enthusiasm and vigour in the implementation of this game-changing digital process.

PBC Today, as all regular readers will recognise, has been covering the BIM topic all throughout 2014, with 2015 being no exception as can be seen by the extensive coverage in this edition alone. Our BIM experts have been key in delivering important messages to industry about the latest developments and where more effort needs to be directed. I imagine that even our 'experts' are still learning a few new things about BIM as we progress on this digital journey, and that is where communication is vital. It's so important that we talk to each other so that we can all learn and become in the least more knowledgeable, and hopefully at best, create more experts to guide us through potential barriers to BIM implementation.

David Philp, BIM philosopher, Head of BIM Implementation for the Cabinet Office, and key figure at the UK BIM Task Group (and a must-follow on Twitter by the way: @thephilpster) is instrumental in delivering the BIM message. I'm certain that most of our readers will have either read his articles here, or heard him speak at the many BIM conferences he attends, and left feeling better informed.

In April last year, Philp began by telling PBC Today readers that although challenges remain in achieving Level 2 BIM, the benefits are well worth the effort. He mentioned that the Level 2 BIM challenges were "diminishing all the time, and the heavy lifting around the processes have been completed by B.S.I. who published both PAS1192:2 and PAS1192:3, which look at information management and exchanges in the asset lifecycle. To make these work, it is essential that a common data environment is established right from the outset with strong governance, especially around classification systems and naming conventions."

In July, Philp then turned his attention to the importance of SME engagement in BIM, outlining their vital role in maintaining the UK as a BIM leader.

"...collaboration is a key element in the successful delivery and execution of a project programme. In addition, it can act as a lever to help break down silos and successfully share information across teams."

Given that in 2013, there were 4.9 million businesses in the UK, with over 99% categorized as small or medium sized businesses (SMEs), it is not surprising they are seen as the backbone of our sector. Their importance has to mean they have "sufficient digital capacity and capability to ensure that the UK remains at the forefront of BIM leadership across the globe" Philp said.

He continued by highlighting that: "they have to compete on a new basis with fierce international competition for the provision of skills and products and ever tight project affordability 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."

In October the huge issue of collaboration was raised. It is purported that BIM can aid collaborative working, and that collaboration is a key element in the successful delivery and execution of a project programme. In addition, it can act as a lever to help break down silos and successfully share information across teams.

"It's so important that we talk to each other so that we can all learn and become in the least more knowledgeable, and hopefully at best, create more experts to guide us through potential barriers to BIM implementation."

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

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

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

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

Philp is keen for everyone to understand that we shouldn't get "bogged down in a technical discussion when BIM is a behavioural change programme more than anything else", a sentiment often echoed by other contributors to PBC Today.

So what can we expect to see in 2015 except for the final pieces to the BIM Level 2 jigsaw being realised? Well, we certainly should see the release soon of "PAS 1192-5: Specification for security-minded building information management, digital built environments and smart asset management", which should outline the security threats to the use of information during asset conception, procurement, design, construction, operation, and disposal. This should help with security issues raised in Level 2 BIM projects after feedback from early adopters and BIM pilot projects. ■

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BIM: The bigger picture

At the Viewpoint North American user conference in Portland Oregon earlier this year I presented the theory behind Viewpoint's BIM strategy. Because our goal of developing the best Common Data Environment in global construction is heavily influenced by the UK BIM mandate, the diagrams and processes of PAS1192:2/3 featured heavily, and information exchange and activities either side of the contract line were discussed in some depth. Nowadays, the audience rates the speakers on mobile devices and comments were captured in snappy tweet sized snippets, so the feedback wasn't long in coming. The most fascinating was 'Very informative, but the session wasn't about BIM'. If the process of building an information model as a team to inform and enrich the design – build – operate lifecycle isn't BIM, what then is?

It's clear that BIM means many things to many people.

This seemingly bizarre comment made me think. Words and concepts behind acronyms are overshadowed by the desire to adopt new technologies to improve the processes and parts of the project puzzle the beholder occupies. The designers see reusable design artefacts, the contractors see the greatly improved design review process, estimators can see the quantity take-off potential, and the clients are promised better handover information. It's rather similar to the Indian fable of The Blind Men and the Elephant – the true form of BIM is masked by perspective.

At 4Projects by Viewpoint in Newcastle we see the whole picture, or indeed, the elephant in the room, every day. Our users span the entire asset lifecycle from concept sketches, through construction and use to demolition. The B555 roadmap describes the need for a common data environment on both sides of the contract line so that information in the project information model (PIM) can be curated collaboratively by the tier 1 appointments and their supply chains, before being passed into an asset information model (AIM) for the clients operational use. Critically this AIM information should be structured in the same way as PIM. When the next project starts, the information can be churned back into the project as a key element of the briefing and tender process. But the self-populating employers information requirements (EIR) based on learnt wisdom from previous projects is currently a long way from fruition.

Car manufacturers have already created cleaner flows of products and data from inception to the hands of consumers. A new car comes with a handbook on operation and maintenance, the specification of the wiring or chassis is not relevant to the owner. In a similar way a building should be delivered with a well ordered handbook of relevant information. COBie is designed for this purpose; although each building is unique and requires tailoring of the required elements.

Why, also, do major construction companies and design practices adopt an internal facing strategy for BIM, when the government is encouraging a more external facing collaborative approach? Moving past this phase as we approach 2016 is the key challenge, and no one business can do it alone.

Perhaps delivering Level 2 ahead of the mandate is stalling for some because they believe their partners haven't completed the required work to reach this level, and focus therefore on matters that can be addressed today like developing a clash detection strategy, or deploying new BIM authoring software.

One of the most commonly cited shortcomings is the quality of EIRs. Lacking a fundamental digital project briefing document draws the focus away from creating a rigorous COBie delivery process. This is a symptom however, rather than the cause. How can a client prepare an adequate EIR when they don't know what data they need, or are able to, procure.

With prime responsibility are the facilities management software vendors. It is often said that until the FM tools can take COBie, the requirements cannot be set and, in turn delivered. FM software vendors refute this. They say that as soon as they know which parts of COBie their customers care about, they'll happily map COBie to their tool without risking access to legacy data. The FM world is aware of BIM and its consequences, but delivering BIM for FM tools which are fully 'COBie ready' is like designing HD ready televisions in the days when we only had 4 channels. The recent release of BS1192:4 was a key step towards BIM for FM in the UK, but software is not developed overnight and until this standard takes hold in live contracts the scope of works will remain incomplete.

Clients also take issue with the project team for not offering a menu of data for them to choose from; a kind of data takeaway menu allowing decisions to be made at the tender stage about which bidder offers not only the best price and value in terms of the physical project, but allowing the data product on offer to be judged as part of the process. But as with the FM conundrum the contractor counters with the need to understand the scope of works before pricing the job. As it is, BIM consultants are currently working hard to uncover the client's data needs by playing the role of a digital archaeologist, and the resultant bespoke EIRs lack consistency.

The government is also to blame for weak BIM Execution Plans leading to BIM projects resembling traditional projects but with more models and some new software tools. 'They haven't even finished Level 2, so how can we work to it?' This is true; it isn't all there yet despite 2016 approaching fast, and the situation described may appear to be a Mexican standoff, but the government has addressed the issues they are charged with resolving believing it will have a domino effect on the other issues that prevent progress. They believe that through standardisation and a mandated process, a world leading construction industry will prosper in the UK, selling its services to the world whilst delivering better projects at home.

Substantial investment in UK construction has delivered the right platform to deliver more efficient, more predictable and better informed projects than ever before. The 1192 suite of documents has been designed and delivered to address the situations discussed above. The classification system required to unify the way we order work across the supply chain to deliver information exchanges has been chosen and is on its way to delivery. The dPoW work is underway to allow clients to plan their projects and specify their requirements in a standardised way. All this with the COBie schema mandated some time ago to offer a framework for passing information from PIM to AIM, combined with the imminent EIR template make for a compelling description and facilitator for Level 2 BIM maturity. When all of this effort is outlined, or even distilled into the Bew-Richards wedge, which first appeared in 2008 it is no wonder the world is paying attention, this includes global software providers like Viewpoint.

Although UK defined, these are not just UK specific issues. Every modern construction industry needs to extract structured data from their projects, distilling it into information, which, combined and interrogated produces knowledge, impacting their business with wisdom won.

As for BIM, has the concept outgrown its acronym? Maybe it's just 'Big Data' with BIM processes as a mere source. We now have software as a service (SaaS) databases for construction, offering cross project knowledge capture and the collaborative data capture as and when it is created either on site, in the office or in the factory. This is why Viewpoint, as a software company that focusses solely on construction and which has a wealth of experience in SaaS and databases, is really focussing its energy in the BIM arena. We know construction and understand how challenging every day can be in your business and develop tools to help. We are already the home of thousands of live projects with all of the complex needs this brings. However, as construction industry processes evolve, the more structured data the supply chain will be able to produce to clients demand, creates a need for construction to have software tools that facilitate the delivery and acceptance of a digital product alongside the built fabric. So if you want to talk about how to construct, procure and take advantage of the 'I' in BIM call the 4Projects by Viewpoint team.

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Moving to Level 3

Reports would have you believe that the design team is endangered due to the continued traction Building Information Modelling (BIM) is gaining in our industry and the belief that BIM is a panacea that automates design.

The Government requires that all centrally procured projects are compliant with BIM Integration Level 2 by 2016. Level 2 Integration essentially means using separately designed models, for example for the cost manager, architect, structural engineer and M&E engineer that are integrated (federated in BIM speech) by another piece of software ('middleware').

Many government bodies are well on the way. The next stage, Level 3, is a fully integrated single online model including sequencing, cost and life cycle information – 4D, 5D and 6D respectively.

A number of consultants appear to view this as a threat. We see this as one of the greatest opportunities for the professions for years.

Having worked on numerous projects based upon BIM it is clear that the architects' ability to provide cost planning is not a risk, and equally the structural engineer is unlikely to be providing the concept design anytime soon.

The early stages of design still require the expertise of the cost consultant to create estimates from scant information whether based on a fag packet or an early BIM.

The issues of client confidentiality and commercial sensibility mean that it is not appropriate to embed costs in a BIM. There

King's College London's Champion Hill scheme utilised BIM

are now numerous software solutions for cost consultants to rapidly extract quantities from a BIM and create a cost plan or Bill of Quantities based upon the BIM. Future software development in BIM will eventually allow us to secure confidential data from other users. This is part of the governments proposed 'Level 3' Integration Model which is a few years away yet.

What is different for the QS is the process, particularly the briefing of designers to ensure that the BIM is designed in a manner that allows us to reuse data. Even then not all the information the QS requires is available directly from the BIM. There will always be an element of 'manual' work for the QS to close the gaps in the information provided to them.

We have also found that the reality of transferring data between the various pieces of software is not as seamless as the software industry would have us believe. Loss of data and file incompatibility is a major issue and the time to resolve this should not be underestimated. Large file sizes also need managing if both your software and hardware is to cope.

The design team definitely isn't dead but must adapt to BIM if we are to properly embrace this sector changing opportunity.

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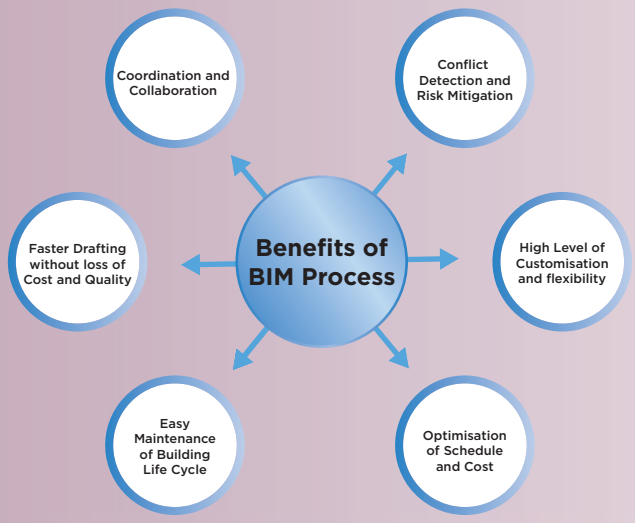
The way we partner with organisations – understanding their requirements and aspirations makes us stand out from the rest. Having successfully worked with numerous companies to implement the move to BIM, we now have a highly developed and refined process that can be adapted to individual needs.



What is BIM?

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

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

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

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COBIE – UK CASE STUDY
STRIDE TREGLOWN

In 2012, architects Stride Treglown were appointed to deliver a UK Government early adopter BIM project. As 'pathfinders' working with newly defined processes and delivering COBie outputs, Stride Treglown faced a number of challenges. To find out how Stride Treglown successfully implemented the project, Solibri UK Managing Director David Jellings, chatted with Anthony Walsh, Senior Associate and Sector Lead for Public & Community Projects and Dean Hunt, BIM Co-ordinator for Stride Treglown.

Stride Treglown is an international architectural practice with overseas offices in Dubai and Abu Dhabi and eight offices in the UK including London, Cardiff and Bristol, making them the 10th largest architectural practice in the UK.

Sustainability influences the way Stride Treglown runs its practice and since 2009 they have reduced their carbon footprint by 40%. Their expertise covers most sectors and they apply commercial awareness to balance the sometimes conflicting aspects of time, cost and quality to achieve the best outcome for our clients.

Stride Treglown have always invested in technology and are at the forefront of BIM implementation.

How did you first become aware of the Government BIM and COBie requirements?

'We had been working in a BIM environment for a number of years and as one of our key client groups is government, in particular justice and defence, we were aware of the new COBie requirement as a government directive from the outset. To help improve our knowledge, we've attended numerous conferences and seminars and disseminated the information internally to raise our overall company awareness. We knew this was going to be important and that it would involve developing new working practices, so we wanted to be properly informed.'

When/how were you first involved in a COBie project?

'In 2012 we were appointed to deliver one of HM Government's Early Adopter projects. Our appointment was as the technical delivery architect, initially to deliver the scheme to COBie data exchange stage 3 (representing the technical design solution). This changed however and we were eventually became tasked with fully coordinating the BIM process and COBie data requirement (with the lead contractor, other consultants and the supply chain) to stage 6 – i.e. practical completion.'

What were your individual roles in the project?

Anthony Walsh: 'I am a Senior Associate and Stride Treglown's Sector Lead for Public & Community, which incorporates this particular work stream.'

Dean Hunt: 'I am Stride Treglown's BIM Co-ordinator responsible for directing the project team in a collaborative BIM environment to ensure that the geometric coordination and data requirements were achieved and fully coordinated. I needed to develop new workflows and strategies to achieve the COBie data requirements for the project.'

How did this project change the way you worked?

'We were already familiar with current BIM processes, such as coordinating geometry and clash detection. However, the new process required us to output intelligent data in a format that could be easily accessible to all. This necessitated implementing new working practices and protocols to ensure that these outputs could be incorporated into the COBie schema. Technically, we had to invest in additional add-ins for authoring tools to enable a more efficient workflow. We also had to invest time working with other project partners to help them deliver the data requirements.'

"Early engagement of the whole project team is essential to ensure productive output. The management and collaborative culture of the team is just as important as the technical manipulation of the data."

Anthony Walsh, Senior Associate, Stride Treglown

What was the main initial challenge?

'This was a new way of working, not just for us, but everyone from the client down. The biggest challenge at the start of the process was the initial lack of understanding by the project team. The information requirements and formats were at first ambiguous, but after research into the requirements of COBie, the required levels of data became clearer and more understandable to us all.'

And the wider challenges?

'The whole team were fully committed to delivering the project, but not having previously worked with COBie, it was a steep learning curve for everyone involved, including the mechanical & electrical engineers, civil & structural engineers, catering suppliers and key supply chain partners. All were very enthusiastic about working in a collaborative environment. We believe our lead role was instrumental in ensuring that all parties were fully integrated into the process.'

How did Solibri become involved?

'We were aware of the options available to output COBie data, including directly from the authoring software itself. Initially this seemed like the obvious and easiest option but unfortunately it did not satisfy the requirements. It was important to us that we found a way of automating what was essentially a very manual process, in order to develop a repeatable workflow for our future COBie requirements. We originally became aware of Solibri Model Checker from our attendance at the ICE BIM Conference in 2012 and it seemed to provide the solution to many of our problems.'

How was Solibri Model Checker (SMC) applied in the project?

'One of the main problems we faced was how to ensure that the model contained the complete and correct COBie data. It is very inefficient to spend time validating, and checking COBie outputs only to have to correct them further down the line. Using SMC rule sets, we were able to validate the completeness of the COBie output before exporting to the data sheets. Using the classification tables to coordinate all consultant models is a particularly powerful feature of SMC, furthermore, SMCs infinitely configurable user interface makes coordinating data straight forward and particularly excels when using IFC models prepared by varying authoring software. Within SMC we were able to federate all discipline models using IFC, which is the industry standard exchange format and also a requirement of the COBie deliverable. At every stage, the Solibri UK team worked with us closely to optimise these solutions.'

How successful was the application of SMC?

'We believe we successfully implemented the workflow that we initially set out to achieve. We strongly believe that COBie should be an output provided by data in the authoring software which is then federated, coordinated, validated, and checked by SMC, which then automates the export to the completed COBie sheets. By eliminating any manual data entry in the final COBie sheets we not only save a huge amount of time, but more importantly eliminate user error from the process. Large projects that require data output from many maintainable assets becomes almost impossible to achieve without using automation software such as SMC.'

How do you see the future for COBie and Solbri's role in its implementation?

'Being championed by government, COBie will be business as usual from 2016 and we are already seeing elements of COBie being requested by some private clients. We feel ultimately that Excel as the output will gradually disappear; however, COBie data will remain and become the universal delivery method across all projects. Stride Treglown has now adopted SMC software to undertake internal coordination so that as a practice we can deliver fully co-ordinated buildings. We feel confident that SMCs communication method is far superior to its competitors and will be an essential component of future project deliveries.'

"It was important to us that we found a way of automating the process, creating a workflow that was repeatable. It was imperative to generate the data requirement via industry standard IFC format as COBie data is a subset of IFC. We strongly believe COBie data should reside in the authoring software which can then be federated, coordinated, validated, and checked by Solibri Model Checker".

Dean Hunt, BIM Co-ordinator, Stride Treglown

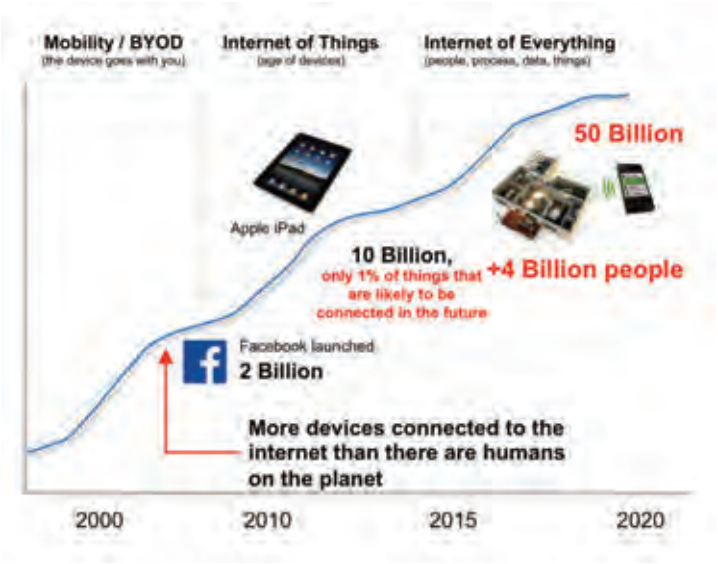
BIM and the data challenge

In developing data solutions for BIM Maturity Level 2, we also need to have in mind the future needs of Level 3 and beyond. Steve Thompson, Chair of BIM4M2 and Market Manager for Construction & Infrastructure at Tata Steel evaluates the product information required and how it can be delivered...

One of the most interesting aspects of digitisation of the construction industry for me is the potential to see a more complete picture of the reasons for a project and how an asset can be delivered, operated and maintained to maximum benefit. With my architect's hat on I see the BIM process as potentially providing a more complete and detailed brief to work with, with access to the information I need to make real-time decisions. With my product manufacturer's hat on I see it as a way of helping project teams ensure they have the right product to meet their specific needs, as defined by the whole project team throughout the asset's life-cycle. This may sound idealistic, but on both counts these scenarios have already been achieved many times over, they're just not yet the norm.

To illustrate the bigger picture and the direction of travel, it's worth looking at the number of things connected to the Internet, and how this is predicted to increase exponentially over the coming years. There are already significantly more things connected to the Internet than there are humans on the planet, and the impact of this is that things and humans can more easily communicate and interact.

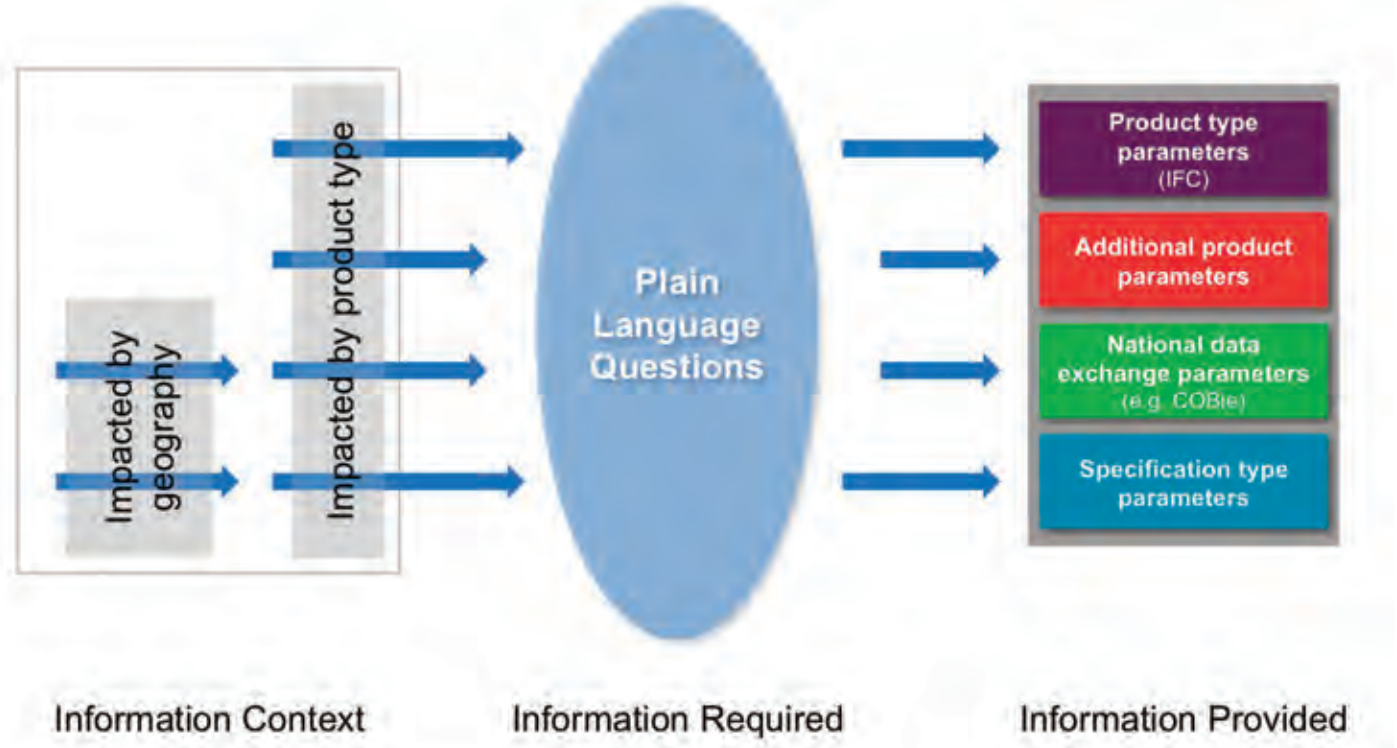
In addition to the predicted significant increase in connectivity, the United Nations are predicting a global urban population growth of over 2.5 billion between 2014 and 2050 (United Nations Population Division, 2014). In short, that means that if we house the increase in population at an average of 100 people per building, we will need to build just under 2,000 residential buildings every single day for the next 35 years.



Devices connected to the Internet over time. Source: CISCO IBSG, 2013

The reason for this slight detour is to highlight the point that when BIM maturity Level 2 becomes the norm, we are still only at basecamp in terms of the potential that can be achieved. It also means that in developing data solutions for Level 2, we need to have in mind the future climb to make sure we don't keep heading back to basecamp and starting again. From a delivery perspective, it means that with the scale of the physical construction challenge ahead, we need those tasked with delivery to be involved in defining the information that they will need to succeed, working with those who have the product data (manufacturers) to identify the data available and its potential benefits.

To get to the Level 2 basecamp we need structured, accurate, reliable and accessible product data that



not only clearly describes what a product is and how it performs, where it comes from and how it needs to be maintained, but also helps in the specification, supply and construction stages of its lifecycle. The challenge for the manufacturer amongst others, is to provide the right information in a suitable format to support a vast range of players, across different sectors and in different territories, using different approaches. If that is going to be achieved, there are a few key issues to address:

- Clearly defining what a product is, so that everyone and everything knows what they are looking at;
- Understanding the information requirements of different players (e.g. architects, engineers, supply chain partners, contractors, clients) and providing answers to those requirements;
- Understanding the most suitable format for exchange and use of information;
- Understanding how information requirements change in different countries or applications;
- Delivering the information required to address all of these issues, and understanding the potential resources and investment required.

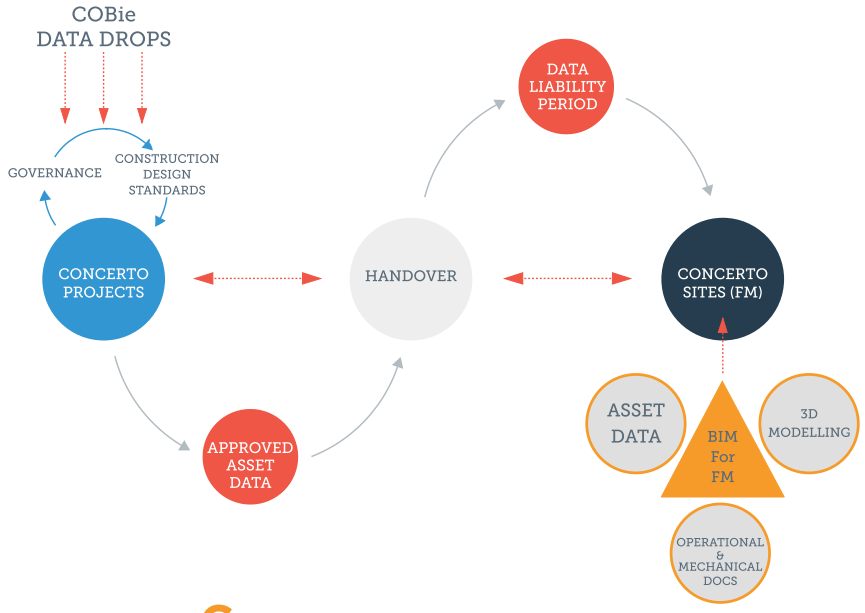
It is certainly crucial that product information can be exchanged across software platforms and regions, so there needs to be clear mapping to open standards, including IFC (the Industry Foundation Classes). In addition, there needs to be clear mapping to any nationally mandated or required exchange formats such as COBie in the UK. The terminology used in these systems is still inaccessible to a large proportion of those who need to use them, including the majority of product manufacturers. Describing the thickness of a profiled composite cladding panel highlights the need for clear descriptions and definitions of parameters. Whilst generally described to the same ISO standard, a quoted panel thickness can mean

Continued on page 67...

CAPTURING, MANAGING & GOVERNING DATA FOR SUCCESSFUL DELIVERY

Concerto offers intuitive property project, asset and facilities management solutions which facilitate complete integration and successful delivery of the BIM environment throughout this process.

CONCERTO PROPERTY ASSET MANAGEMENT FOR BIM



THE CONCERTO SOLUTION:

1 Supports the automated implementation of BIM data captured during the property design and construction phase into the property asset management solution

2 Defines a process/checklist which enables clients to understand what BIM actually means and also understand how the level of data to be captured during the design and build phase impacts on the building handover. In brief, helps a client become an 'intelligent client'

3 Aids the efficient hand-over of BIM related data to the end user of the building

4 Allows a 360 degree approach to the managing and updating of BIM related data supporting the approach to updating/editing BIM data outside of the design environment, whilst updating the design environment automatically

5 Allows the intelligent client the ability to define the BIM data required for operational use and automatically pushes the defined data into the operational management system

6 Allows the end user of the building to leverage the collated BIM data, in both data table and visual forms, served via web technology for use within a facilities management environment

7 Provides a software environment in which the engineering asset related BIM data can be linked to planned and reactive maintenance activities, enabling performance and financial analysis of the assets to be undertaken. This data can then be utilised for review against subsequent and/or similar property related projects, enabling lessons to be learned from project to project

8 Enables engineering asset related BIM data to be directly associated with property condition surveys, enabling condition scores related to property related engineering assets be reportable as part of a property condition 5 year rolling programme

9 Creates and presents a technology strategy in support of the requirement to adopt a modern technological infrastructure in order to leverage BIM as a whole regardless of building life cycle stage

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Continued from page 65...

the core thickness (without the depth of the profile), or overall thickness (including the profile depth). This means that if a parameter is simply described as thickness, there may be two very different values used in comparisons, potentially leading to incorrect specifications.

This is where the concept of Plain Language Questions (PLQs) comes in. If a manufacturer understands the questions they are being asked and in a language that they are familiar with, they are much more likely to be able to provide the right information to answer the question.

This is the concept behind PDTs and PDSs (Product Data Templates, which become Product Data Sheets when completed with a manufacturer's product information). Originally developed by CIBSE, the PDT Steering Group now consists of representatives from other professional institutes, content providers, BIM4M2, BIM4 Fit Out, BIM4Water and BIM4DC (Data Centres). The focus is on having a cross-project team that has experience of a product or system type to develop templates based on what is required to effectively deliver that product, in commonly used language that is accessible to all. The BIM4M2 Data Working Group is working with others to significantly broaden out the reach of the templates to other product types.

In developing PDTs, the starting point is always COBie or SPie (Specifiers Product Information Exchange) templates where they already exist to ensure the minimum information requirements are met, and direct links to open standards. However, to maintain accessibility the complexity of mapping from the Plain Language Questions to these standards can, and is dealt with away, from the simplicity of the main data sheets.

The sheets are developed in a controlled environment between members of the design, manufacturing, contracting and FM communities, and then opened out to industry for wider consultation, meaning that the templates are created for industry, by industry.

There can be location-specific or sector-specific PLQs, all which are completed in Excel, and can then be used across all software platforms.

One of the key benefits of this approach is that the information only needs to be supplied by the manufacturer once for every product, and it can then be used in many applications, with project teams defining what information they require at each project stage.

The format can also be used as part of the selection process to filter products that meet the specified requirements. This may be achieved in the UK through the likes of the forthcoming Digital Plan of Works (DPoW), which whilst not mandated is likely to be used on public projects and will be a useful tool. However, as manufacturers who supply products into different territories, we need to provide data in a way that can be used in several formats and platforms, thus supporting both the Government's 2025 Strategy to increase exports of construction products and those private sector clients in the UK that are already using alternative approaches to developing MIDPs (Master Information Delivery Plans), and different formats of information. By providing information in a format that can be easily mapped to suit these differing requirements we are likely to arrive at a more efficient solution all round. ■

For more information on Product Data Templates, visit www.bimtalk.co.uk or the BIM4M2 website.

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What has BIM got to do with us?

BIM is fast becoming an industry standard and accepted norm for new building projects. Here, David Wigglesworth, Managing Director of newly formed UK Specification from ASSA ABLOY, demonstrates why it is so important for even manufacturers to take note.

Discussing his own journey to BIM, David highlights some of the key issues he has personally faced in ASSA ABLOY's journey, as well as some of the decisions the global leader in door opening solutions has taken that will be proven when put into practice in the evolution of UK Specification.

BIM is by no means new news. It's fair to say, if you're only just discussing BIM then you're already behind the curve, especially as the journey to creating BIM objects and a suitable offering for your customers and the market is a long one, not to mention a steep learning commitment.

BIM Journey

BIM is something I understood as early as 2011 in my prior role as Managing Director of ASSA ABLOY Security Solutions and is now integral to our success at UK Specification.

ASSA ABLOY Security Solutions made excellent progress to stay ahead not just in adopting and delivering on the principles of BIM, but also in understanding, developing and driving BIM strategy.

We were able to leverage and drive this strategy alongside showcasing our knowledge and understanding of environmental performance declarations and whole life costings to leverage market influences at leading industry events such as ecobuild, held in London.

Although we've learnt a lot along the way there are still many unanswered questions and unknown elements for producers of smaller components.

For the most part this is going to be a case working alongside end users and adapting to the changes as BIM practices become more sophisticated and common practice across a variety of builds.

And there is no doubt BIM has taken us to many places. But with the mandate by the government that all government-funded projects should use BIM by 2016, now just a year away, overall it has certainly taken it from a theoretical concept developed in the 1970s to an everyday practice that will impact on almost all levels of our industry.

So, Do You Care about BIM?

The real question for us was did specifiers, architects, design led main contractors or property development companies care about BIM and architectural ironmongery and doorset specifications?

Admittedly, our first instinct was probably not, but when you consider the amount of doorsets that can be used in a building and the impact of, for example, the door width on a building's overall dimensions, flow of people through a building and ultimate safe and security of those people, we soon began to see that if positioned correctly BIM did have a role.

If approached correctly in a way to help not hinder specifiers with too much detail, then BIM objects for architectural ironmongery and doorset specifications would indeed be beneficial.

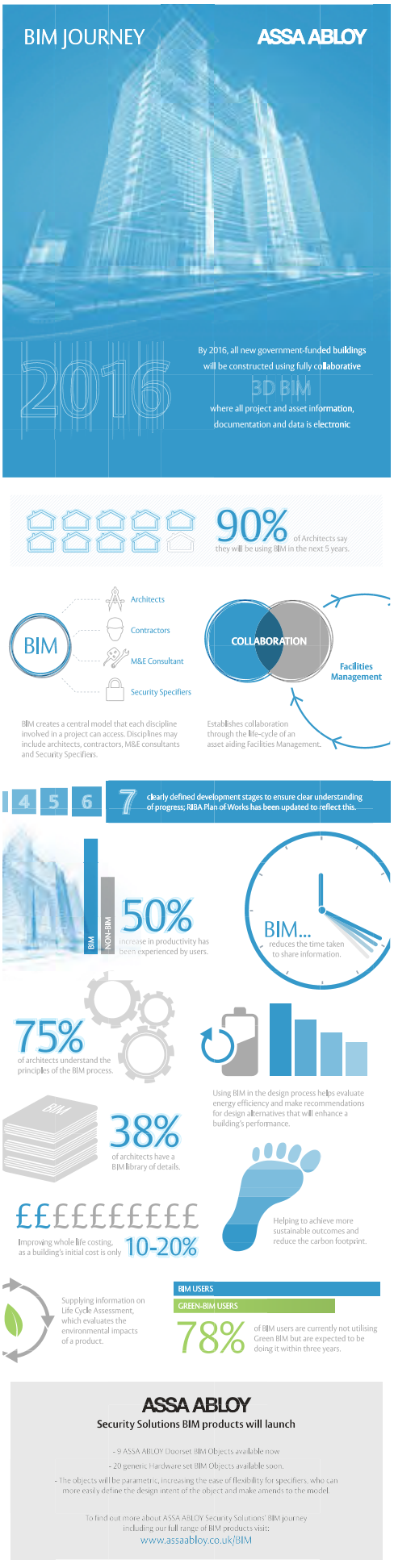
Thus, early on we created a BIM task group and obtaining feedback from our customers and their clients the early decision was made that this was a specification solution driven project rather than a product led one.

"BIM is by no means new news. It's fair to say, if you're only just discussing BIM then you're already behind the curve, especially as the journey to creating BIM objects and a suitable offering for your customers and the market is a long one, not to mention a steep learning commitment."

We then decided to pursue the development of doorset objects before latterly extending this to design led architectural ironmongery and doorset specifications sets.

By providing doorsets as BIM objects we believe we are providing a more solution-based proposition that is useful on all building scales.

The initial nine BIM objects were developed and designed to offer a total package of both architectural ironmongery and doorset specifications and doors and each object is tailored for the most common applications and uses.



Demistifying BIM

More than this, the purpose of BIM is to create efficiencies in the development and construction of buildings, save time during the planning and build stage and reduce the cost of rectifying mistakes or unnecessary maintenance work. From the initial research we conducted we believe that supplying doorsets as BIM objects is inline with these objectives.

It creates an 'off the shelf' solution that has the correct architectural ironmongery and doorset specifications included, tailored to suit nine different applications, whilst supplying the information needed to be useful in an overall BIM development.

The next stage of the journey of these doorset objects was to find out how useful they are by establishing how are they used and the specific requirements of specifiers? We then rolled out 20 generic doorset objects, which we expect to have a much more select audience and again this will be another stage of the journey from which we can build and learn from.

This objective is something we are very proud to have not only achieved, but exceeded, with over twenty nine BIM doorset objects now available, designed to help architects and contractors who are under increasing pressure to use BIM building practices in all aspects of a building design.

Our BIM Future: My Summary

The RICS describes BIM as "the biggest cultural change in a generation". Culture is a set of shared beliefs, values and practices. In the case of BIM, it represents not just a process or technological trend but a cultural change is caused by external forces i.e. governments and other groups.

As ASSA ABLOY takes the next step in its own evolutionary journey in the launch of the unprecedented UK Specification business division, BIM is undoubtedly integrally important to our success.

By overseeing the background to the launch, our proposition to the market is now very clear and our objective is to depict the specification market and define what it is all about.

Our mission is to act as design consultants in the context of arranging ironmongery schedules to work with the design and performance of a building in terms of security, operation and the intended footflow of traffic. And we know anything specified must be fit for purpose and meet the standards that are legally required.

Deep within this proposition, we know that everything starts from a design led approach. The added value we are looking to capture is whole life costings – in terms of durability and lifecycle of the product for the building and our driven involvement with BIM initiatives will be key to our success.

We also know we still have many more lessons to learn but are determined to stay ahead of the BIM knowledge curve to deliver exact requirements for architectural ironmongery and doorset specifications.

For more information on UK Specification, please visit: www.assaabloy.co.uk

or join the debate on LinkedIn at: www.linkedin.com/company/assa-abloy-uk

Issued on behalf of UK Specification by Edson Evers PR, The Hollies, 120 Newport Road, Stafford, ST16 1BY. For further information please contact Lydia Lewis at Edson Evers LLP on Tel: +44 (0)1785 255146 Fax: +44 (0)1785 211518 or email lydia@edsonevers.com

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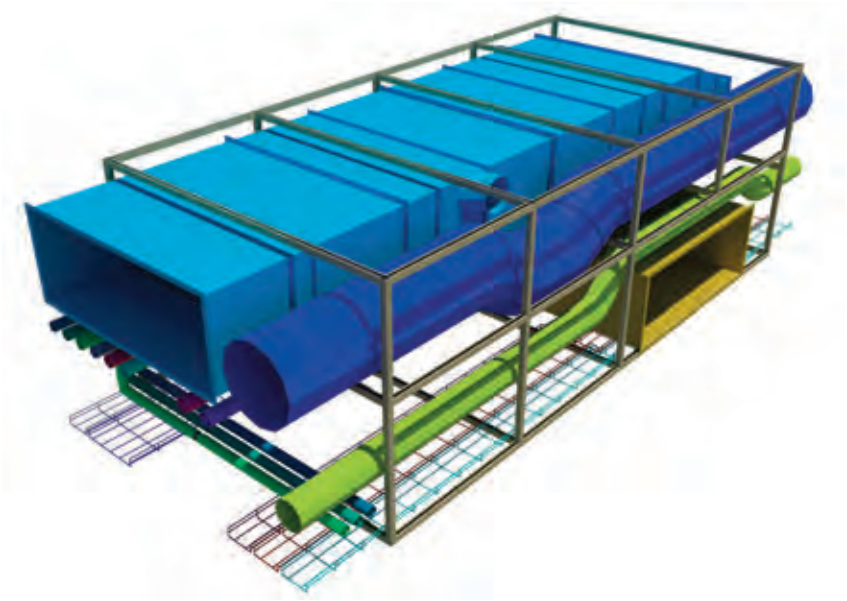
The CAD Room is geared up for BIM

There is a widespread fact across the UK that BIM is the future for construction. The UK Government has put a great emphasis on Building Information Modelling (BIM) recently as part of their Construction Strategy, with the aim of all relevant departments adopting the collaborative Level 2 BIM by 2016. In their BIM document "Strategy Paper for the Government Construction Client Group from the BIM Industry Working Group" it is revealed that the renewed focus on BIM is due to the fact they the UK Government expects this will bring a significant improvement in cost, value and carbon performance through the use of open shareable asset information.



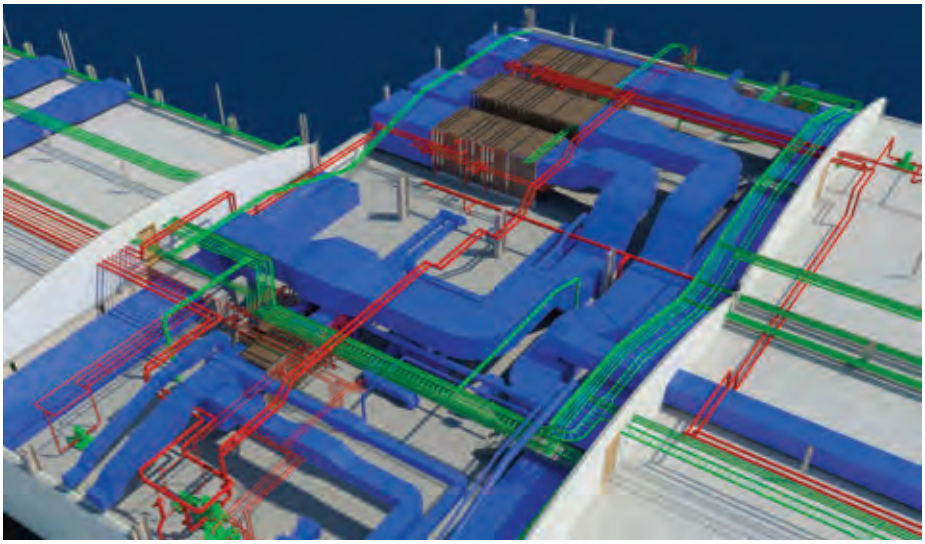
This emphasis, coupled with the current decrease in construction programmes, means that there is an increase in need for very accurate co-ordinated drawings within clients budgets. The CAD Room knows that this is key to our clients successfully installing their M&E projects, and so we ensure that we produce a fully co-ordinated BIM, CAD and M&E solution for each client's specific need.

The CAD Room specialise in providing a complete integrated CAD service for any project utilising the design to produce co-ordination, fabrication, and installation drawings for all building services. The CAD Room also ensure that all services offered are totally co-ordinated with the building fabric such as: steel structure, concrete structure, walls, ceilings, etc., and we also ensure that all building services standards are adhered too.

We make use of 3D structural and architectural models, to give you the client the ability to easily visualise the services within the completed building, which allows early clash detection enabling solutions to be found quickly therefore reducing time and cost. All building services are modelled using the latest BIM software, to ensure that all rendered images are realistic and this enables us to provide "fly through's" to clients so that all disciplines involved in the project can visually understand the extent of the installation. All our team are experienced in BIM co-ordination and M&E services, and adopt construction design management (CDM) good practice on all projects completed.

Some of the key benefits to using BIM and M&E co-ordination are:

- Collaboration ensures a better outcome. If all people involved in the project (including contractors, specialists, and suppliers) are using the same 3D model, it means that they should begin to cultivate better and more collaborative working relationships.



It also means that the focus is on achieving best value, from inception of the project to the eventual decommissioning.

- Enhanced performance. The use of BIM means that the comparison of different design options becomes swifter and more accurate, and therefore allows development of more sustainable and cost-effective solutions.

- Easier modification. Using BIM allows the project to be visualised thoroughly at an early stage, which gives all parties involved a clear idea of the project design, and therefore easily enables modification of the design in order to achieve the exact results desired. BIM also allow the project to be "built" in a virtual environment so that complex procedures can be walked through beforehand, temporary work designs can be optimised, and the procurement of materials, equipment and manpower can be planned correctly.

- Reduced Wastage. BIM allows for precise programme scheduling means that materials are not over-ordered and that they can be ordered on a just-in-time delivery basis which should reduce the potential for damage. The BIM Model can also be used in the automated manufacturing of equipment and components, which should mean more efficient material handling and waste recovery.

- Asset Management for the Machinery's Life. BIM Models contain product information which will assist with the commissioning, operation, and maintenance activities of each piece of equipment, including: interactive 3D designs showing how to take apart and reassemble items of equipment, and also specifications which will allow replacement parts to be ordered.

The essential services which The CAD Room offer in order to ensure that your BIM project is a success are:

- Co-ordination Design Development

- Drawing Production Management

- Drawing Production from 3D Model

- BIM Intelligent Modelling i.e. co-ordination of Building Services

- Improved Engineering Solutions

The team at The CAD Room are also well used to the major file transfer sites e.g. ASITE, 4PROJECTS, 6PROJECT, BIW, etc. or you can use our own FTP site if need be.

The CAD Room is located within easy reach of major road, rail and airplane networks, which enables us to carry out local, national and international projects with ease.

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Government Soft Landings within the BIM environment

Sarah Birchall, Sustainability Engineer with the research and consultancy organisation BSRIA Ltd, describes what is required by Government Soft Landings...

The word BIM is everywhere at the moment, and every now and then Government Soft Landings (GSL) is also mentioned in the same sentence, but there is still some confusion within the industry around what BIM and GSL are.

The UK construction sector is interested in these subjects because the UK Government has specified that all central government departments will be required to adopt fully collaborative 3D BIM (in terms of BIM maturity, this is Level 2 BIM which means, among other things, that all project and asset information, documentation and data is worked on electronically and collaboratively) on their projects as a minimum by 2016. Government has refined its definition of Level 2 BIM as compliance with the following seven components, one of which is GSL:

1. **PAS 1192-2: 2013** Specification for information management for the capital/delivery phase of construction projects using building information modelling

2. **PAS 1192-3: 2014** Specification for information management for the operational phase of assets using building information modelling (BIM)

3. **BS 1192-4: 2014** Collaborative production of information Part 4: Fulfilling employers information exchange requirements using COBie – Code of practice

4. **Building Information Model (BIM)** Standard Protocol for use in projects using Building Information Models

5. **Government Soft Landings (GSL)**

6. **Digital Plan of Work**

7. **Classification**

The first five of these are already available. The Digital Plan of Work and Classification are currently being developed by RIBA Enterprises, as part of a TSB-funded research project and are due for delivery in spring 2015.

On the UK Government's BIM Task Group website BIM is defined as "value creating collaboration through the entire life-cycle of an asset, underpinned by the creation, collation and exchange of shared 3D models and intelligent, structured data attached to them". BSRIA views it more simply as a managed approach to the collection and exploitation of information about built assets.

GSL is a UK Government client requirement on projects that has been drawn up from the principles of a BSRIA published document called Soft Landings Framework BG54/2014. These requirements have been developed for use within Central Government's own procurement strategy. The key objective is about "aligning the interests of those who design and construct an asset with those who subsequently use it".

Although the GSL process generally follows the Soft Landings methodology described in the publication, it also adds the use of metrics to demonstrate compliance with construction project outcomes.

Under GSL, government departments will be required to define a series of high-level outcomes at the very beginning of a project. GSL also provides key

Sarah Birchall, Sustainability Engineer, BSRIA

questions that will need to be asked by the government department's GSL project champion (an individual assigned to each project to see the GSL process is followed through) and answered by the construction team as the project progresses. It is designed to aid decision making and focus on the defined project outcomes. There are four areas that these outcomes need to link with and each will need targets and monitoring throughout the project stages:

1. **Functionality and Effectiveness:** the needs of occupiers/users of the building must be met effectively.

2. **Environmental performance:** performance targets in terms of energy efficiency, water usage and waste reduction must be met.

3. **Facilities Management:** a clear, cost efficient strategy for managing the operations of the building is vital.

In 2009, BSRIA and the Usable Buildings Trust developed the core principles and published the Soft Landings Framework. The idea behind it is to make buildings perform better from day one.

The Soft Landings approach identifies specific gateways in the design and construction process where the performance needs to be reviewed and any issues addressed. By using the gateways to make changes and monitor improvements, a building can pass more smoothly from its build phase into occupation. This creates a "soft landing" rather than a "crash landing".

4. **Commissioning, Training and Handover:** it is important that projects are delivered, handed over and supported to meet the needs of the end users, operators and maintainers.

Exactly how the metrics will be set is still work in progress but GSL, along with its measurements for building performance, will help ensure that the building delivered meets the client's aspirations and objectives. GSLs main benefit is around meeting the needs of the end users and the required operational outcomes.

Further information about BIM, Government Soft Landings and Soft Landings can be found at the following websites:
http://www.bimtaskgroup.org/gsl/
https://www.bsria.co.uk/services/design/soft-landings/free-guidance/

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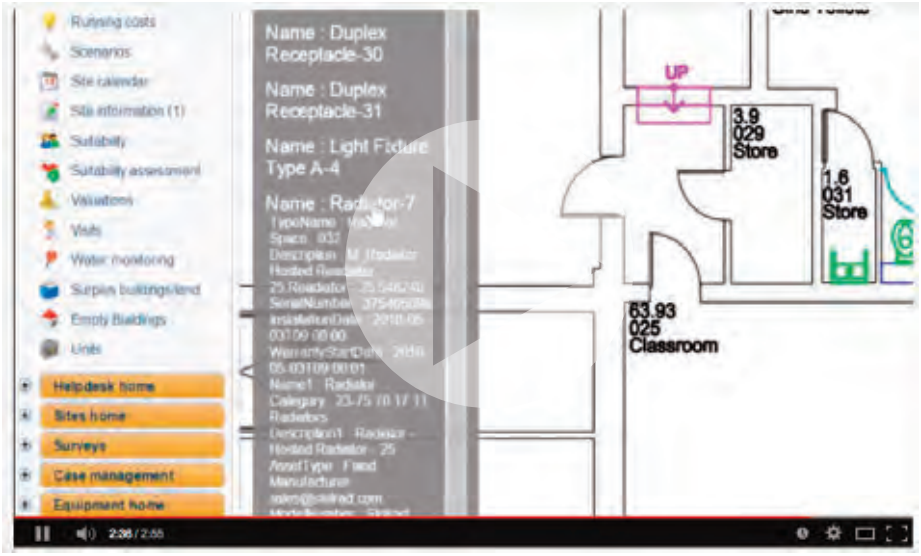
GREG DAVIES, Operations Director at Concerto, discusses their integrated asset management solution, their on-going commitment to Government Soft Landings and his thoughts on 'the golden thread'...

WHY DID YOU DEVELOP THE CONCERTO SOUTION?

We originally developed the Concerto solution to directly support transformation projects within the UK Local Government, specifically to support Government collaborative strategy in managing estates and large-scale capital projects. Now it is used in both the public and private sector in all sorts of contexts.

We recognised the need for the Public Sector to move away from using disparate systems and knew we could offer significant efficiency savings via an integrated, web-based solution with all relevant comprehensive functionality under one umbrella – project, performance, asset and facilities management. Concerto also integrates with external finance solutions so organisations can manage the entire asset lifecycle process without jumping from one solution or plugin, to another.



SO HOW DOES CONCERTO SUPPORT THE SOFT LANDINGS FRAMEWORK?

The solution supports PAS1192-2:2013 both in terms of information management and handover.

The management, collaborative exchange and validation of data takes place in a single, Common Data Environment (CDE) which supports 2D and 3D visual data rendering, as well as transferable and scalable detailed data sets.

We also consider how the Asset Management, Operation and Maintenance of the project will be carried out and ensure handover of validated data to the Facilities Management phase.

Our initial development of BIM was directed at the handover from the project phase to the operational phase. Initially, the functionality was based around capturing and importing data from COBie and automatically building the MEP equipment register against the property asset, then utilising that MEP asset data for planned maintenance and reactive maintenance purposes. This allowed organisations to track asset full life cycle costs, encompassing areas such as reactive and planned maintenance, which then feeds a myriad of additional benefits.

We then examined the relationship between PAS1192 2 and 3, and continued our development to allow the capability for the Concerto system to collate and validate the data during the project phase, so when it is taken into the asset register, it is correct and relevant and in full support of PAS1192 & 3, which mean no more chasing Alice down the rabbit hole, as 'one truth' of the data exists.

With this in place, we are now in the position to guarantee project and asset BIM data is validated, handed over and all held in one central environment for the full life cycle of the asset. This maintains the essential 'Golden Thread', which is often lost in the construction process.

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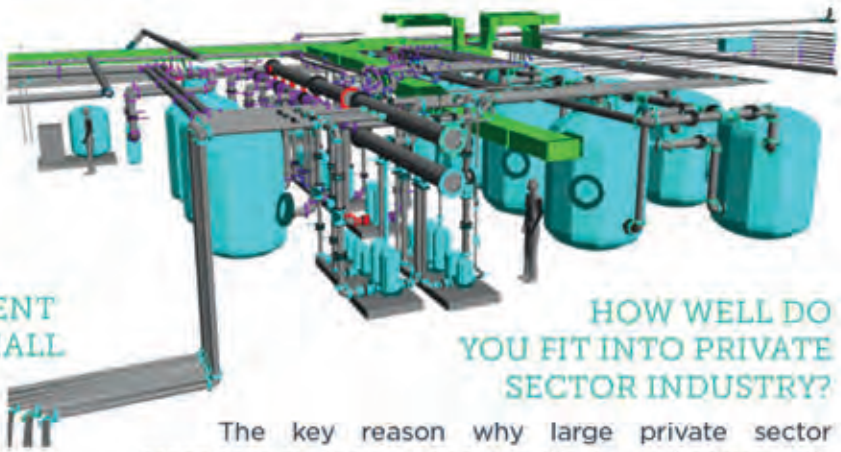

TELL US ABOUT YOUR INVOLVEMENT WITH THE MANCHESTER TOWN HALL PROJECT?

Our BIM developments stemmed from relationships with customers in the Public Sector who were becoming more aware of the requirements of the Government Soft Landings strategy for BIM.

3 years ago, Manchester City Council invited us to attend a meeting with Laing O Rourke and NG Bailey about the Town Hall Complex, where we discussed how BIM data would be leveraged on the project in support of the government Soft Landing strategy for BIM. Lots of questions were asked across the table, and from this meeting, we formulated our initial ideas of what we really needed to achieve with regards to BIM.

We went away and at our cost developed the initial BIM functionality. We then came back to the table with a proof of concept perspective how we envisage BIM to operate within our system. They loved it.

AND, HOW IS THE FM TEAM AT MANCHESTER GETTING ON 3 YEARS DOWN THE LINE?

The FM Managers at Manchester state that the interface is simple to use by FM teams. For example, If a building user reports that a room is too cold, the FM team can access data relating to the systems supplying heat to that room and isolate these from the highly complex M&E systems supplying everything else. This makes it much easier for them to identify potentially defective items, such as the boiler supplying the cold room. Once the offending piece of kit has been identified, it is centred on the user's screen and placed in context, enabling the FM team to work out how to access it. They can also link to the operation and maintenance manuals and fault codes for that boiler, historical work, cost and survey information.

Data can also be downloaded to mobile devices, which is particularly useful when working on systems buried deep in a basement or in a remote area where there no data signal available.

They're now using Concerto across the Council for complete operational management of the entire corporate property portfolio, which includes condition surveys, estates management and much more, enabling the building of detailed financial information on of the council's assets.

HOW WELL DO YOU FIT INTO PRIVATE SECTOR INDUSTRY?

The key reason why large private sector organisations also engage with us is because we are able to demonstrate the engineering data being captured and utilised during the operational life of the building is validated and carried through the process within a centralised, web based and integrated software environment. This is attractive for organisations who have large, geographically disparate, and complex asset portfolios, as the costs to manage these portfolios account for a large percentage of budget spend, so every penny spent that doesn't need to be reduces profitability.

WHAT MAKES CONCERTO'S OFFERING STAND OUT?

We offer a very holistic solution based on an understanding that no two organisations operate in the same way. We have purposely developed our solutions to be intrinsically flexible so that clients can configure the software to their ways of working. Our clients are very positive about our solution and their relationship with us as a team, as we have always focused on good relations, usability, powerful functionality and value for money.

We believe that by allowing our customers to have a direct influence over the future development of the functionality; we aim to ensure the future relevance of our solutions within their organisations....we have never lost a client so we must be doing something right!

BIM4M2 education – the tools you need

Richard Blakesley, Chair of BIM4M2 Education Group and Managing Director of Howitt Consulting, describes how the group works to educate, inform and encourage action to satisfy a BIM journey...

You only have to mention the term "BIM" to a building product manufacturer and you will be certain to elicit a response. That's the great thing about them; they keep up with what's going on. The responses however will differ quite substantially.

For some, this is the opportunity they have been looking for to differentiate their offer, for others it's just another distraction from what they want to be doing. Still others see it as a necessary evil or an avoidable fad which will have its day just like so many others before it.

So the main question is, how do we decide which is the right response? And then, having decided that, the other questions come in thick and fast:

- What does it all mean?
- What level of resource will it take?
- When is the right time to make the move?
- What do we need to produce?
- Aren't we in the VHS-Betamax situation?
- Why isn't there a consensus on what Specifiers and Contractors want?

That's another thing about building product manufacturers, they ask great questions.

That is where the BIM4M2 education working group comes in. It is a group of manufacturers and consultants who are honestly trying to wrestle with

these questions. We have some great discussions, sometimes heated, because we don't always agree.

We have given ourselves the task of answering three basic questions:

- Is BIM right for us?
- How do we learn more?
- What should we do about it?

On the back of these questions at BIM4M2 we are in the process of launching some tools which manufacturers can use to get on the journey.

The first tool addresses the most basic question – do we need to respond to the BIM challenge? This is an evidence-based tool and looks at a number of areas

to work out the likelihood of a manufacturer needing to respond. These areas include:

- Level of business in different Market Segments
- The type of product which is manufactured
- The route to market that is pursued
- The level of requests for BIM content

In all there are eight areas and the manufacturer is encouraged to use this tool as part of a workshop which allows for a consensus to be developed. The tool provides a "likelihood of need to respond" score and also evidence-based response notes for each of the areas. This has proved very useful to provide direction and also to gain initial buy-in from board members who may not yet have grounding in the BIM arena. The tool also asks if the manufacturer would like to gain an insight into the financial risks of not responding to BIM. This risk is based on actual turnover and also the answers to the eight questions. The results pick up on survey data to provide a phased level of risk over a five year period. Much of the evidence-based data is from the BIM Adoption Survey of Manufacturers carried out during the second half of 2014 by the BIM4M2 Promotions Working Group. The tool will be launched in March and will be available from the BIM4M2 website.

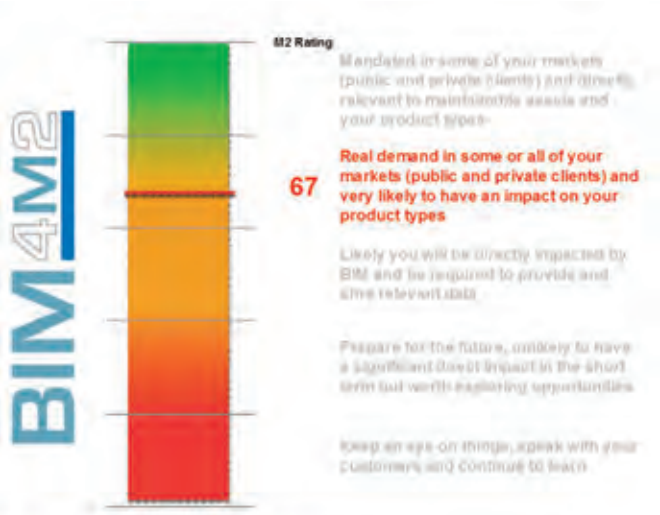

Image taken from the BIM4M2 – "Is it Right For Us" Tool

There are two other tools that are also being worked on. The first will allow the manufacturer who wants to learn more to find resources which will help. One of the things we hear most from manufacturers is that they feel many of the BIM providers are speaking from a place of self-interest and so we will make sure that these resources will have been checked for accuracy and independence.

The other main tool will be an outline for how to put together an implementation plan for BIM development. This will include sections on Business Planning, Implementation and Review processes.

The aim of these tools will be to educate, inform and encourage action. In short, to put manufacturers back in the driving seat as they look at how they should respond to the BIM challenge. ■

For more details please visit the BIM4M2 website at www.bim4m2.co.uk

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Ensuring accurate data for BIM projects

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

A working group called BIM for Manufacturers and Manufacturing (or BIM4M2), has been created to represent the needs of manufacturers as the industry moves towards the 2016 deadline. The group contains a mix of manufacturers (SMEs and multi-nationals), consultants and content providers, and aims to develop a consistent approach to structuring BIM data across organisations to improve information exchange and asset management. British Gypsum strongly supports the aims of this group as it recognises the importance to the construction industry of having a consistent approach to data structure.

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

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

[1] Competitive Advantage, Adoption of BIM 2013

British Gypsum
SAINT-GOBAIN

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

White Book System Selector

Find system solutions and BIM data quickly

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

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

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

BIM LEVEL 2

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SketchUp 2015 and it's interoperability with BIM

With the recent launch of SketchUp 2015, the latest edition of the 3D modelling platform from Trimble Buildings Group. Designed for architects, engineers, design and construction professions and with more than 30 million unique activations in the past year, SketchUp is the most widely used 3D modelling software in the world today. The latest launch features a new 3D Warehouse and some interesting integrations with BIM (Building Information Modelling). Elmtec is the UK distribution partner in the UK and our dedicated team can offer you advice, support, and provide you with the latest updates.

SketchUp Pro is a powerful tool for exploring and presenting your ideas in 3D. SketchUp is intuitive, allowing anyone to model in 3D quickly and accurately. Using 3D models, professionals can make informed decisions, communicate project details and share ideas with colleagues and customers.

LayOut – part of the SketchUp Pro suite, lets you combine SketchUp models with text and 2D graphics to produce multi-page presentations, professional design documents and permit, construction and other dimensioned drawings.

People from many disciplines use SketchUp to help them imagine their world in 3D, these include; Architecture and Design, Construction, Engineering, Digital Entertainment, and Education. SketchUP Pro's interoperability with other commonly used CAD/3D tools and data has been improved significantly with the latest version. In incorporating three new features to export and classify models, the program is making key steps into the world of integrating design.

IFC Export – since the information embedded in information models is often used by other software programs SketchUp Pro 2015 now includes another important industry standard to its roster of supported exports – the IFC 2X3 file type.

"Elmtec is the UK distribution partner in the UK and our dedicated team can offer you advice, support, and provide you with the latest updates."

Classifer – this feature allows users to classify objects with the pre-loaded IFC classification, use alternate classification types or create a customised system for specific needs.

Component Options – provides editable options relevant to an object's classified type, allowing pertinent data about each object to be managed throughout the information modelling process.

"BIM workflows are often complex and rigid processes, and we believe they don't need to be," said John Bacus, director of SketchUp product management at Trimble. "With the new release, we are enabling users to participate more effectively at any point in the information modelling process. We've added simple tools for adding structured others on their project teams, regardless of the tools being used."

SketchUp Pro licensing is now friendlier than ever before. Every SketchUp 2015 download starts with a 30 day trial of Pro features. Even better, 2015 Pro licenses can be used on a Mac or PC.

For more information please contact Elmtec on 01844 263750, email sales@elmtec.co.uk or visit www.elmtec.co.uk/sketchup.

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What is SketchUp?

SketchUp Pro is like a pencil with superpowers. Start by drawing lines and shapes. Push and pull surfaces to turn them into 3D forms. Stretch, copy, rotate and paint to make anything you like. More advanced? Start modelling from CAD and terrain data, photographs or even hand sketches.

New to SketchUp 2015

New tools

- SketchUp 2015 features an official Rotated Rectangle tool, so you can now draw precise rectangles unbound by default axes.
- With our new 3-point Arc tool -- there are now four different ways to draw arc'ed edges.
- We've overhauled LayOut's Label tool. You can now conveniently place and align beautiful, two-segmented leader labels.

Performance

- We've sharpened "Face-Finder," the code SketchUp uses to create faces while you're modelling.
- SketchUp is now self-aware of styles that help your model render faster.

SketchUp Pro licensing is now friendlier than ever before. Every SketchUp 2015 download starts with a 30-day trial of Pro features. Even better, 2015 Pro licenses can be used on a Mac or a PC.

Contact **Elmtec**, Sketchup's distribution Partner in the UK

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BIM – a digitised construction world

Peter Caplehorn, Chair of BSI's Strategic Committee for Construction and Deputy Chief Executive of the Construction Products Association shares his thoughts on BIM...

For a very long time there has been nothing as influential as BIM or as change generating with the potential to affect the business operations of everyone in the UK construction industry. A big claim, but one I make with very good reason.

I have worked in the industry as an Architect and been involved with practical construction technology and regulation for a long time. The issue identified by Sir John Egan in his 1998 'Rethinking Construction' report was that "Projects are widely seen as unpredictable in terms of delivery on time, within budget and to the standards of quality expected." Similarly, Sir Michael Latham's 1994 'Constructing the Team' report spoke of the fragmented nature of the industry. This is compounded by the use of unreliable information in a chaotic and selfish manner, resulting in huge inefficiencies and continued risk-laden and adversarial positions on nearly every project.

In contrast, the last few decades have seen many other industries embracing digitalisation – using software to design and develop test their products and processes. Many have also employed the same technologies for procurement supply chain management and full business operations. We often highlight the aero, automotive and food supply industries as significant examples.

BIM has come into its own and has been used individually and in many locations around the world for construction projects for many decades. In the not so distant past, the architecture, engineering and construction industry relied on CAD and marked-up drawings to build. BIM creates a virtual 3D representation (embedded with all the relevant real world data) of a building using digital technology, enabling accurate construction of the design, improving efficiency and reducing costs across the process.

"Most of manufacturing are now planning and developing their approach to digital supply and procurement. At the heart of all this activity is data – ensuring it is accurate and is used throughout the project being the simple and all-encompassing aim."

So valuable is this, that the recent UK initiative to organise digital approaches at a national level, set a mandated level of achievement and provides thought leadership supported by key standards in a unique manner. We have now reached a level of momentum that has invaded every corner of the industry. Clients, consultants, contractors and the whole supply chain have a growing awareness of the business benefits. This includes a move towards a faster pace of working especially as BIM acts as a traceable database for the project. Therefore all the associated costs of every design change can be tracked in real time.

There is still a lot to be done but the direction of travel and the potential have been clearly set out.

We are now just about 15 months away from the mandated deadline for anyone wishing to undertake government work to be able to demonstrate ability to maturity level 2 – a challenge as many teams at the leading edge are still not capable of this. However, the supporting methodologies information and standards are in place or being developed. We have

the family of PAS documents, and the data templates and the digital plan of work will be available in spring 2015.

Most of manufacturing are now planning and developing their approach to digital supply and procurement. At the heart of all this activity is data – ensuring it is accurate and is used throughout the project being the simple and all-encompassing aim. Identifying and using reliable data results in everyone having access to accuracy, de-risks the project, provides a clear set of information about the built asset, and how it operates.

This new world means a change of perspective from the client, the consultant, and the contractor, and does so for the better. The common and binding language of clean data allows efficiencies in time cost and performance, allowing prediction of these key parameters for everyone's benefit so we can actually design and build exactly what was intended.

This is the goal, and for it to deliver the full potential it will change every aspect of the industry, including the regulatory and planning world. Work is underway to establish how planning and planning applications can be processed in a BIM environment. Surveys of existing buildings and land areas can be undertaken digitally. Several parts of the world have developed electronic planning and regulation approaches. The UK will hope to incrementally process planning applications followed by processing of BIM models and associated data in the next few years.

Work is also underway to process technical standards digitising building regulation approval. This will start with assisting the process areas that are effectively based on relationships or numerical compliance. This will be followed by increasing digitisation of more complex areas allowing designers to design, and regulation requirements will be increasingly undertaken through software. In future years, regulations may be formatted to be BIM friendly. However, that lies some decades ahead although work on how we move to maturity Level 3 is being mapped out and ensuring the regulation world is fully integrated is clearly essential.

Back to the here and now, there is still a considerable way to go, and for the benefits to be shared by everyone confidence in the outcome is key. Some areas of the industry are investing huge sums, even the smallest of SMEs are equally committed and proportionately investing time and money to join this step changing movement.

The need however is to ensure you are aware of the business benefits and the business plan is about adapting to BIM. For more information see the BIM task group website: bimtaskgroup.org and download the relevant PAS documents at the BSI Shop (http://shop.bsigroup.com/Browse-by-Sector/Building--Construction/Building-Information-Modelling-BIM/)

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There is a better way...

For Architecture, Engineering and Construction teams, project schedules can slip as much as 30% due to miscommunication. Miscommunication leads to mistakes, and at any level, mistakes lead to rework, costing time and money. Wouldn't it be great if all that extra work could be avoided by keeping everyone involved and up-to-date at all times? The award winning SMART Visual Collaboration Solutions enable any meeting delegate, regardless of location, to participate in a meeting as if they were in the room, including interacting with content, be it simple sketches or in-depth 3D models, allowing them to manipulate and implement changes immediately. This leads to faster decision making, more project completions, quicker target achievements and ultimately, a faster return on investment.

As the global leader in interactive whiteboards, SMART Technologies brings over two decades of collaboration research and development to a broad range of easy-to-use, integrated solutions that free people from their desks and computer screens, making collaborating with digital resources more natural – transforming how AEC project teams coordinate, collaborate and communicate. SMART's solutions include large format interactive touch displays with collaboration software to make meetings more productive and distance collaboration software to support remote workers. Touch recognition features allow all meeting participants – wherever they are located – to directly mark up and manipulate images in the software. There are options for saving the work and integration with Microsoft® Exchange to instantly email session notes to all attendees.

Combining SMART's visual collaboration solutions with industry leading software from Autodesk, Tekla, Adobe and Solibri, project teams around the world have experienced an increase in productivity, decrease in development time and an accelerated rate of innovation and time to market.

Companies including Ibsecad, 4té, Turner Construction, DPR Construction and Volker-Wessels are transforming the BIM industry by using SMART's visual collaboration solutions to deliver projects on time and on budget, without sacrificing project quality. Recent research by Stanford University in the US stated the estimated savings of combining SMART with design review can be up to £2 million.

At the BIM Show Live 2014, SMART Technologies received the prestigious BIMMY Award for Most Innovation Product in recognition of how the solutions are changing the way the BIM industry works. The BIMMY Awards honours those that have raised the bar in relation to the AEC and BIM industry.

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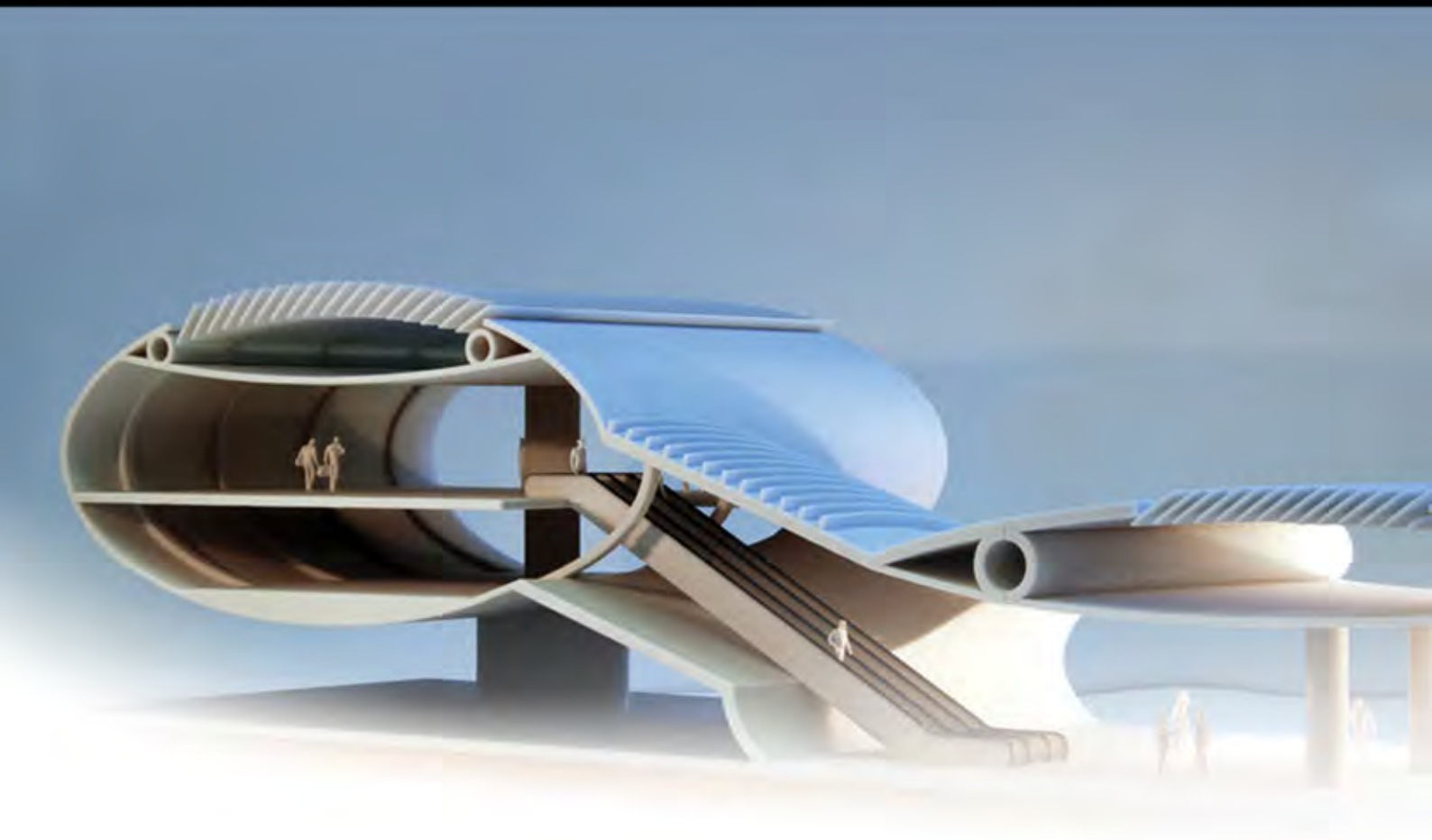

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BIM and the landscape architect

Martyn Horne of the Landscape Institute's BIM Working Group highlights how landscape architects can collaborate and share information with their project teams in the evolving process of BIM...

Any person or company setting out on the BIM journey may understandably think that BIM and its associated term, the Building Information Model, refers directly to buildings or more specifically, architecture. They may also be forgiven for thinking that it also refers to a particular file format or specific piece of software. However, BIM is not a file format, it is not a piece of software and it is not even an information technology. Rather it is a business process that is defined by a series of workflows (that may vary from project to project) and these workflows are enabled by information technology. Furthermore, the building referred to in its name is not a noun as in 'the building', but a verb, as in 'to build'. This is the first step to understanding how landscape architecture fits into the BIM.

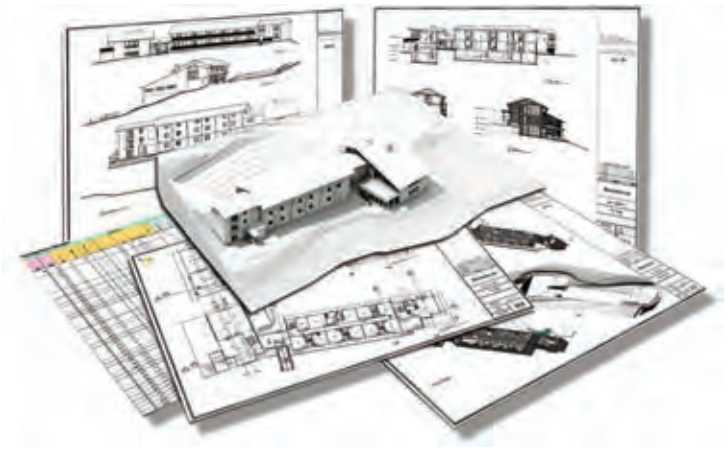

Fig. 1

Collaboration and communication

A key aim of the BIM process is to facilitate collaboration, communication and the effective exchange of data between different members of the construction team.

A typical visual definition of BIM is heavily focused on the architecture and it's often shown without even a basic terrain. But a building cannot, and does not exist as a separate entity to its site. As seen in Fig. 1, even at a basic planning level stage, the 3D model and its linked 2D plans, elevations, sections and information schedules communicate so much more information because they involve the site.

At the Landscape Institute we recognise the need to collaborate in order to get schemes built. The Building Information Model itself, can be seen as a manifestation of that collaborative process of communication and information exchange. It is most easily understood by the image below (Fig. 2), which shows a three dimensional digital model of the project to be constructed.

Fig. 2

From this model it is possible for the various parties involved in the project to extract both visual and data-based information back out of the model. For example, plans, elevation and sections can be taken or cut through the model and information can be

generated in the form of reports and schedules. Crucially, because the information can be taken from the live model, a great deal of the repetitive work encountered in traditional 2D CAD based drawing and schedule creation can be reduced and just as importantly, errors can be reduced or eliminated.

What can landscape BIM offer specifically?
In addition to the traditional documentation stage, the landscape BIM can offer terrain water flow analysis, minimum and maximum grading analysis, site cut and fill calculations, water volumes, existing tree survey and tree protection planning, planting schedules, material quantities, maintenance reports and clash avoidance with underground services.

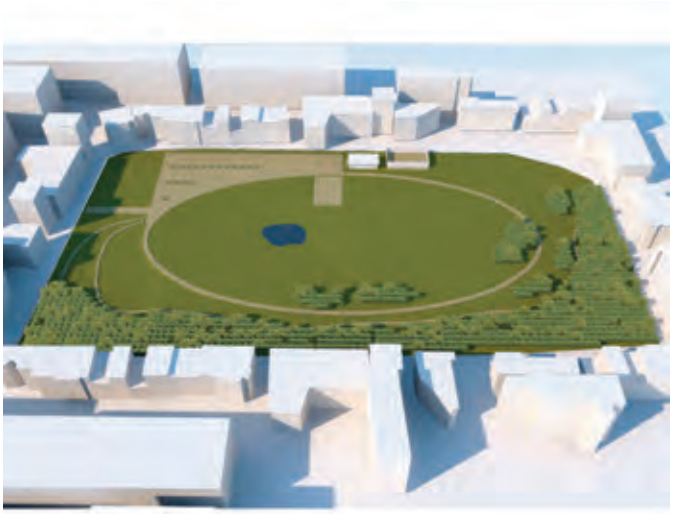

Fig. 3

Both the Landscape Institute and the UK Government recognise that the software required to design and document architecture and engineering is not necessarily going to be the best software for landscape architects. It is one of the reasons that both institutions support the move to certified, but neutral file formats such as IFC and data exchange standards such as COBie and Product Data Templates.

Helping the industry change
One of the remits of the Landscape Institute's BIM Working Group, which was set up approximately two years ago, is to develop change within the industry. To highlight a couple of the group's recent activities, we are currently running a series of BIM Masterclasses around the country to present the BIM workflow within the context of the UK Government's Mandate for BIM Level 2, and the Digital Plan of Work within landscape architecture. The group is also involved in developing a series of Landscape Industries Product Data Templates which will feed directly into BIM Level 2 COBie datasets.

Conclusion
Change can be disruptive. Without a doubt, BIM will require an understanding of new processes and possibly the acquisition of new skills. But it is also important that as a design profession, we also maintain the values that make us unique. Too often, conversations about BIM exclude reference to quality of design, creativity and visual communication and it is really important that as we explore digital approaches and embrace the efficiencies of the new, that we also maintain the best of our traditional techniques and skills and expertise at the same time. It is an interesting time for landscape architecture as it is for the entire construction industry, but there has probably never been a time when the holistic perspective of the landscape architect has been more valuable. ■

For more information, please visit the BIM section of the LI website at: http://www.landscapeinstitute.org/knowledge/BIMOpenProject.php.

Landscape Institute
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21st Century BIM: Virtual Education Solutions

South West College is situated in a largely rural area of Northern Ireland, covering two counties with five separate campuses. It has recently been awarded a Grade 1 by the Education and Training Inspectorate (ETI) and is the only Regional College in Northern Ireland to achieve this accolade ranking it among the top 4 colleges within the 413 across the UK.

The College prides itself on its industry-facing collaboration, which was described as 'best in sector' in the recent ETI inspection. South West College continues to embrace technological advances and change in industry processes in all areas and has established itself as a leader in the field of construction. The College has fully understood the importance of the construction industry in adopting the new technologies and methodologies that are being developed in the area of Building Information Modelling (BIM). In conjunction with Northern Ireland BIM Hub, South West College recently delivered a very successful International BIM Conference which was attended by a large number of industry experts.

In order to support the industry, South West College has developed a BIM Hub to aid the training of those employed within the construction industry and associated services – including both public and private sectors. Industry standard software, such as Revit, Navisworks, Trimble Realworks, Pix4D, etc. has been put in place to support the industry to gain the necessary knowledge and skills in BIM to meet future government legislative requirements. The College has purchased specialised equipment in the areas of 3D geospatial scanning and Drone Technology for aerial surveying.

In recent years, South West College has invested substantially in Virtual Learning, both in terms of infrastructure and staff skills. The reasons for this investment are numerous and the benefits to the college and its students are significant. In November 2011, South West College successfully delivered a 'Virtual Stud-e-day' and 'Virtual Week' with 5655 learners logging on remotely to study online. Due to the success of this award winning Virtualisation Project, the College has increased its capacity to deliver bespoke online education solutions locally, regionally and globally e.g. Health and Safety in the Workplace.

BIM HUB @ South West College

Virtual learning, when delivered by South West College, is extremely 'student-centred'; it is also self-paced, interactive, engaging, hands-on and of high quality. Barriers of distance and time can be overcome which means students now have a choice and the college has an ever growing marketplace. Virtual learning of the future will be very different to what has been offered in the past. Models of delivery are being developed that will mesh with the demands of a student population that is constantly evolving. The use of Remote Access to specialised software such as Autodesk packages, Blackboard, Collaborate, Immersive Environments, Simulation, Learning Games, Augmented/Mixed Reality, 3D Printing, Screencasts and Live Streaming have opened up possibilities that previously were not there. The only barrier we have in the future is our own imagination, and the College is making every effort to ensure our imagination is unlocked and your potential is fully realised.

The College's high performance Construction and Virtual teams comprise of individuals with unique skills that collectively work together to create innovative educational BIM solutions. Every member of the team is highly competent and experienced in their respective areas.

BIM training/courses may be delivered through on-line, blended learning and classroom based approach or through a combination of these.

Examples of courses available:

- BIM – an overview (Foundation Course)
- NOCN Level 4 Revit for BIM
- NOCN Level 5 Revit for BIM
- BIM Project and Asset Information Management (CAPEX & OPEX information management)

As well as the above courses, the College can also offer bespoke training to any organisation and if necessary carry out a company training needs analysis prior to curriculum development. Where applicable, the College offers Knowledge Transfer Partnership (KTP) and Innovation Voucher opportunities. BIM training at South West College will equip construction industry professionals with:

- An understanding of UK Government BIM Level 2 requirements and the relevant national and industry standards
- An understanding of the impact BIM Level 2 will have on construction workflow
- The skills to identify and assess the applications of BIM efficiencies within your organisation and implement same
- Capacity to meet government BIM requirements for main contractors, subcontractors and construction consultants to gain competitive advantage

If anyone within your organisation is interested in finding out more about BIM training at South West College or discussing the design of bespoke content, please contact:

Stephen Moss – Construction Curriculum Manager
Stephen.moss@swc.ac.uk
Tel: 078 9891 3742

Tiernan McAlister – Virtual Education Solutions
Tiernan.mcalister@swc.ac.uk
Tel: 0845 603 1881 - Ext 3705

BIM Hub Contact
bim.hub@swc.ac.uk
www.swc.ac.uk

South West College

Adoption of BIM by product manufacturers

Chris Witte, BIM4M2 Steering Group examines the recent BIM survey by Chris Ashworth, BIM4M2 Promotions Working Group Chair and Director of Competitive Advantage...

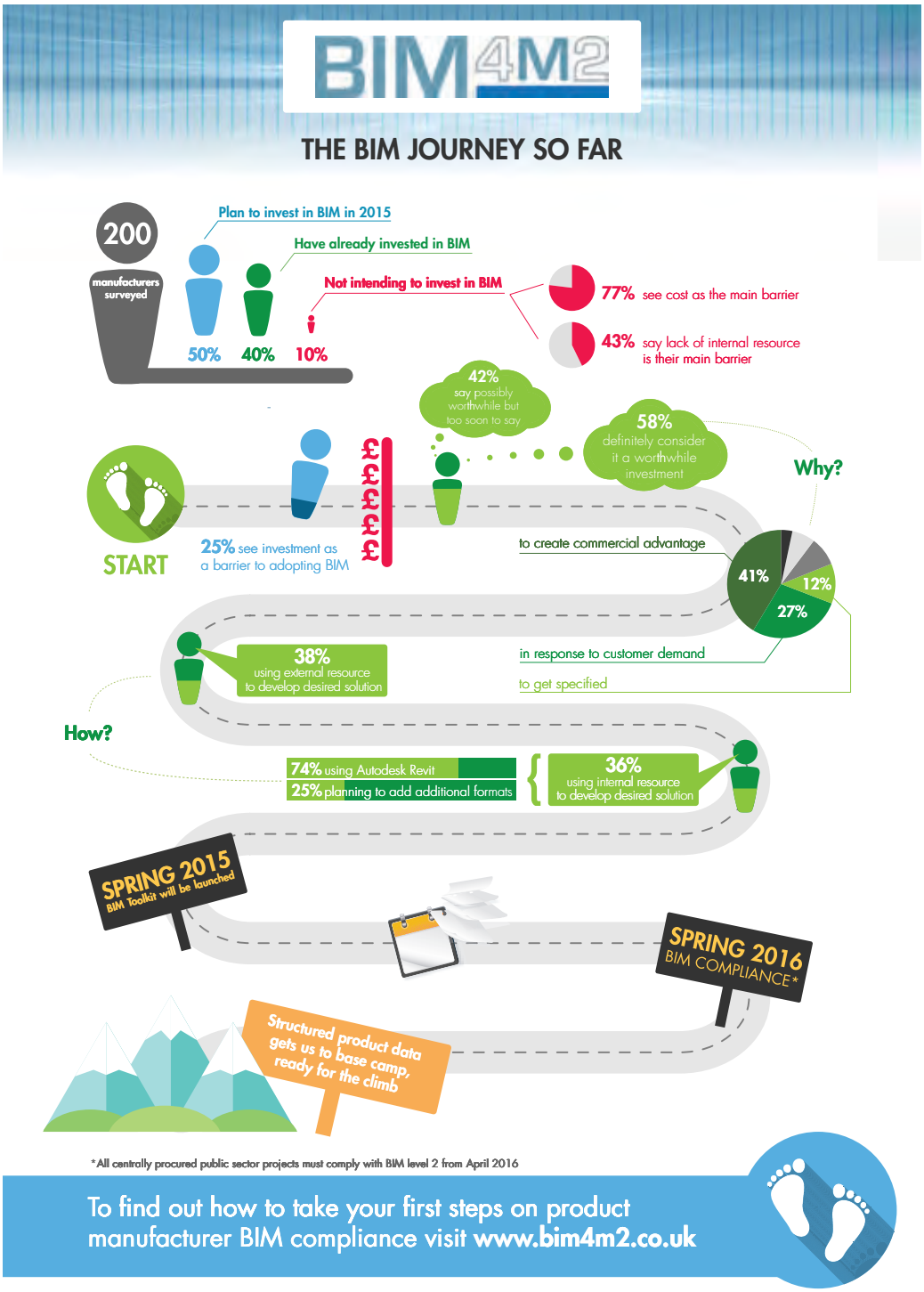
There are a lot of BIM surveys out there. They are all interesting to product manufacturers, but they don't really address our concerns or reflect our progress on our BIM journey. BIM4M2 conducted a survey of just under 200 product manufacturers firstly to understand how we as a newly formed group could add value to those embarking on that journey. An important part of our remit is to educate manufacturers and the insights from this research are helping us shape the advice we are developing. Secondly, we want to share the insights from the survey with as many product manufacturers and other interested stakeholders as possible. The survey should help those who have commenced their journey to assess progress and should act as a stimulus for those thinking about embarking shortly.

Chris Witte, BIM4M2 Steering Group and Marketing Director Northern Europe at Knauf Insulation

Those surveyed that have invested in BIM (40%) have done so to create commercial advantage (41%); in response to customer demand (27%); or in order to get specified (12%). However, 50% of those surveyed, whilst planning to invest in BIM soon (next 12 months), have yet to make a start. Of those not intending to invest in BIM, the cost was the main barrier (77%), followed by lack of in-house resource (43%). It is highly likely that some of these respondents are unaware of the Product Data Template route to compliance, which requires no more internal skills than are currently required to deliver project information; just in a different format.

Now is the optimum time to start your BIM journey, because the standards and optional tools will be complete by Spring 2015. So there is increasing clarity on what is required from product manufacturers. Having said that, there are still some important choices to be made.

One of those choices is about exactly what you need to develop and whether to do it yourself or get a third party to do the work. The first stage is to determine whether Product Data Templates (PDTs) or BIM objects are the best choice for your company. PDTs are excel based templates that capture all the product information required by a specifier and are compatible to BIM level 2. BIM objects (with PDT information as a minimum, plus graphical representation of your product) may be preferred by some specifiers. But whilst populating PDTs can be done in-house (they become Product Data Sheets when you have populated them with your information), fewer companies will have the internal skillset to develop their own BIM Objects. Our survey found that 38% of us are using external resources to develop our desired solution, but 36% are using internal resources. And the software of choice used



is Autodesk Revit (74%) with only a quarter planning to add additional formats.

It would be quite easy to become UK centric in our approach to BIM. However, since 52% of those surveyed export to mainland Europe, it is clearly important that all BIM solutions are sufficiently flexible to work in other geographies, with minimal adaptation. Working with BuildingSMART to achieve standards consistency across geographies will become an increasingly important part of the BIM4M2 role.

1 in 4 respondents saw investment as a barrier to adopting BIM. The main concern is the resource required; but almost as important is convincing internal stakeholders as to the importance of focussing on BIM. Developing the business plan

Continued on page 96...

BIM – defining better information management

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

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

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

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

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

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

Tekla Structures BIM software

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

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

Tekla works with all materials and the most complex structures – you set the limits. Our customers have used Tekla Structures to model stadiums, offshore structures, plants and factories, residential buildings, bridges and skyscrapers.

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

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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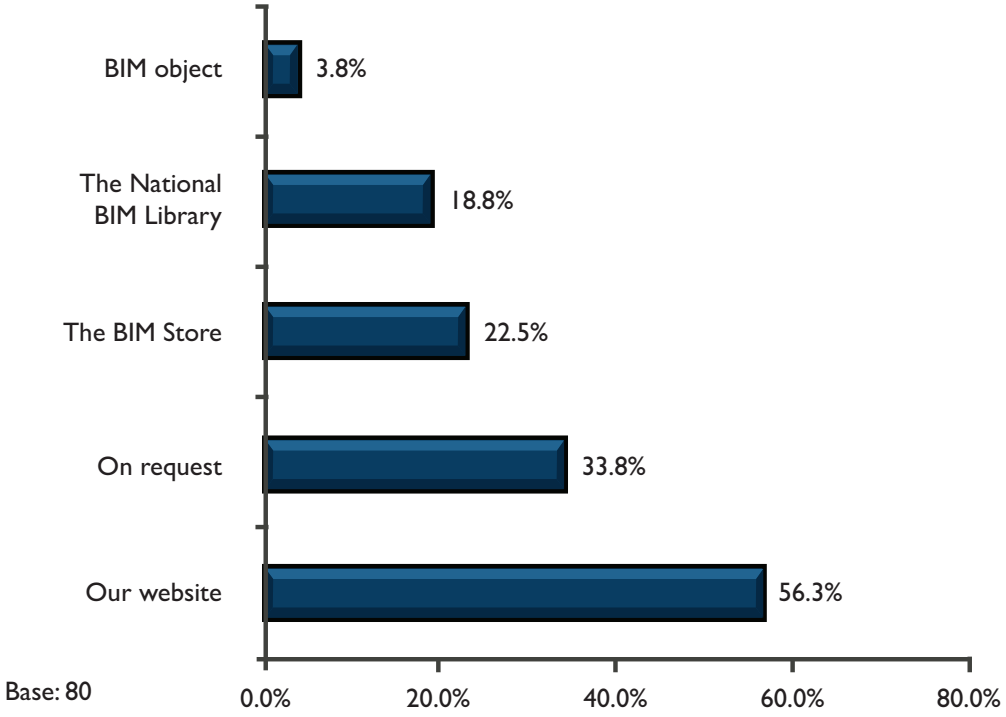
Fig 6.2: Where are your BIM objects available? – Have BIM



Continued from page 93...

rationale to convince senior managers to invest in a BIM solution is part of the advice that BIM4M2 is developing for product manufacturers. Understanding software options also comes out as a greater concern than obtaining the finance to develop appropriate solutions. Of those that have implemented a solution, 58% consider it to have been a worthwhile investment, with one product supplier commenting that:

"There have been a high number of BIM downloads from our website and, as users are willing to register – a good quality database of users is being established. We conducted a survey of those downloading our files and 80% of downloads were for use on current projects. Our specification team are following up on those leads."

Developing BIM objects is not the end of the journey, we have only reached base camp at this point.

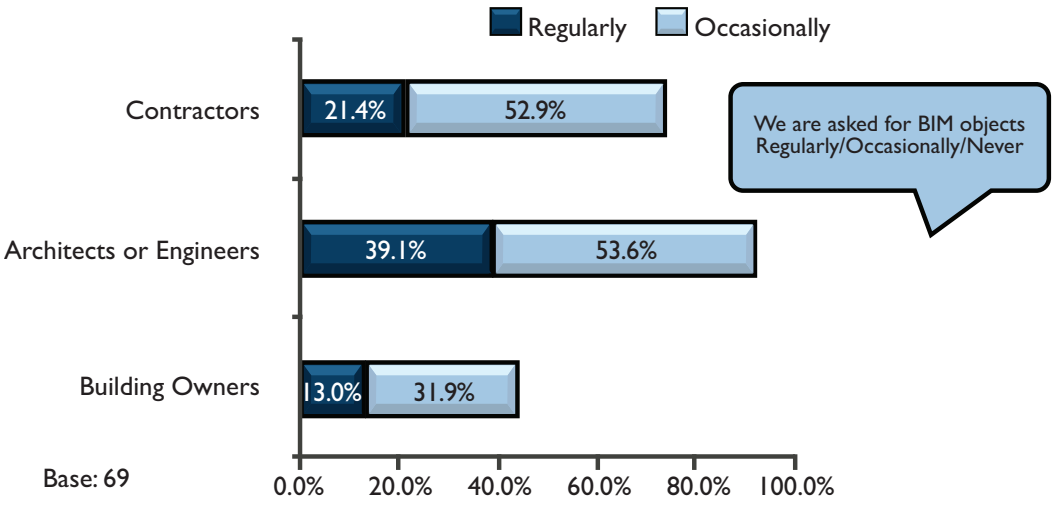
The obvious place to promote your BIM solutions is your website (56%), but 34% of us are being more coy by only making the content available on request. The logic here is perhaps to protect the commercial advantage and tie in a technical conversation to the request, before sharing content. But 45% of respondents are making their content available through the libraries or clouds available such as BIMstore, NBL and BimObject (many of which are hosted both on a library and on a manufacturer website). The libraries give manufacturers an equal presence regardless of size, as well as a high number of specifiers searching their content; something that individual product manufacturer websites can't always achieve.

Those that have published BIM objects can expect requests from architects on a regular (39%) and an occasional (54%) basis; but fewer contractors make requests, as can be seen opposite. Making architects, engineers and contractors aware of your BIM capabilities is clearly an important focus area that can increase lead generation and specification opportunities.

Having a BIM solution where your competitors do not, is likely to be a short term differentiator. How successfully you build the new leads you generate into your CRM processes, and make the connection between BIM solutions and projects won, will be one of your long term differentiators.

Only 13% of those that have BIM solutions have case study examples of how BIM has helped secure work. This is probably because it can take several months for projects to come to fruition, and many

Fig 5.1: Requests for BIM Objects – Have BIM



additional weeks to develop good case studies thereafter. Another reason might be that the BIM solution has been developed as a piece of content, not as a catalyst for process improvement. If the content has been developed by marketing or technical departments, have sales been fully engaged?

Of those manufacturers that have BIM solutions, 82% have an individual responsible for BIM in their organisation, whereas for those planning BIM it is still a positive 58%. The benefits of BIM to the manufacturer are not just external. The need to provide up-to-date structured data in a digital format can lead manufacturers to improve internal processes. Can the data provision be automated? Can the data be used in the manufacturing process? There are examples starting to emerge, anecdotal at present, where companies have used BIM to improve internal processes in a number of ways. To the question: why did you invest in BIM? "business process efficiency", and "improved efficiency of manufacturing workflow" support the idea that BIM is as much about internal process improvement as it is about winning or maintaining specifications.

There is still an education job to do, even amongst those that have already published their BIM solutions. 59% of respondents incorrectly think that BIM Objects must be supplied to meet the Government's requirements in 2016. In fact it is just structured data to PAS 1192 – 2: 2013 that needs to be supplied. The PDTs are sufficient for this, but only 38% of us are aware of their existence.

In summary, the health-check on product manufacturers from this survey is that many (40%) are ready for April 2016 and most of the rest (50%) intend to be. However, there is still some knowledge building required even amongst those that have launched their own BIM content. ■

For the full report go to www.bim4m2.co.uk

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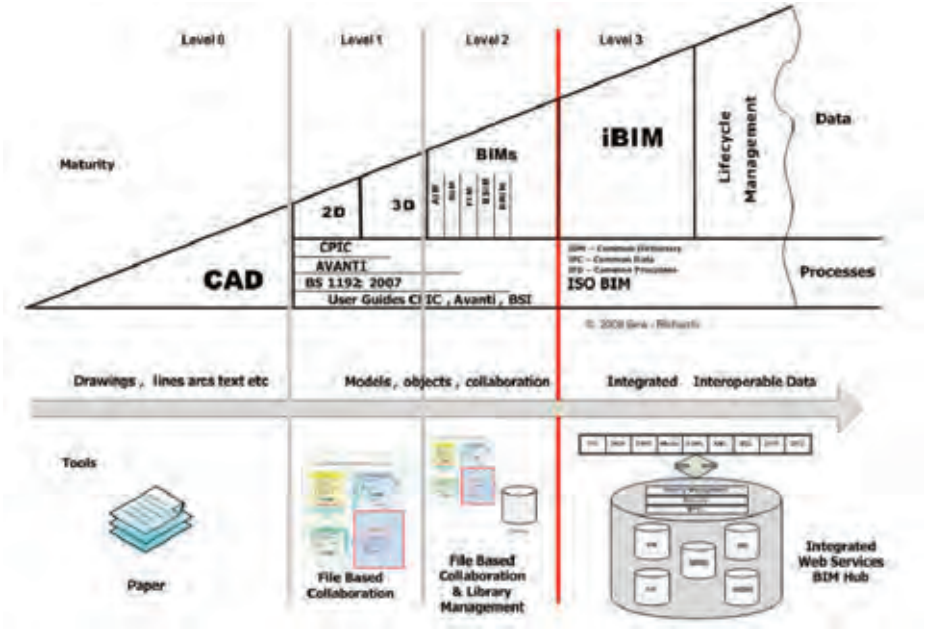
Delivering a new Data Rich environment

The concept of BIM is remarkably straight forward; build a 3D model of what you plan to construct, review and check the model to make sure it works in a virtual environment and then construct it. In addition, this new found medium of communication extends to facilitate the downstream operation and management of the asset by providing access to essential information at the point of use.

For all parties, improved communication, surety of the outcome through 3D, 4D and 5D processes, a single source of truth in the information which can then be shared with all, the opportunity for offsite manufacture and pre-fabrication and the ability to recognise what needs to be done in maintenance before you get to the job site can easily be recognised from many everyday experiences to be a simpler and more efficient way to work.

Our opportunity through BIM remains; to **reduce the waste in what we do by rationalising the process of achieving the outcome**, as well as finding new opportunity from a better understanding and alignment of the end product with the initial requirements. This ideal remains at the heart of the BIM journey.

Many saw the opportunity, but it commendably took Government to lead the charge and their action has now delivered the well-known route map and ingredients necessary to reach the first milestone, level 2 BIM by 2016. As we enter 2015 and see the scale of change taking place around us it is clear that this journey is well underway. In many areas



Extract from Bew-Richards 2008

of the industry there are significant gains being made coupled with extended enthusiasm of the opportunity in front of us to re-engineer our industry, level 2 BIM is only the start of the end game.

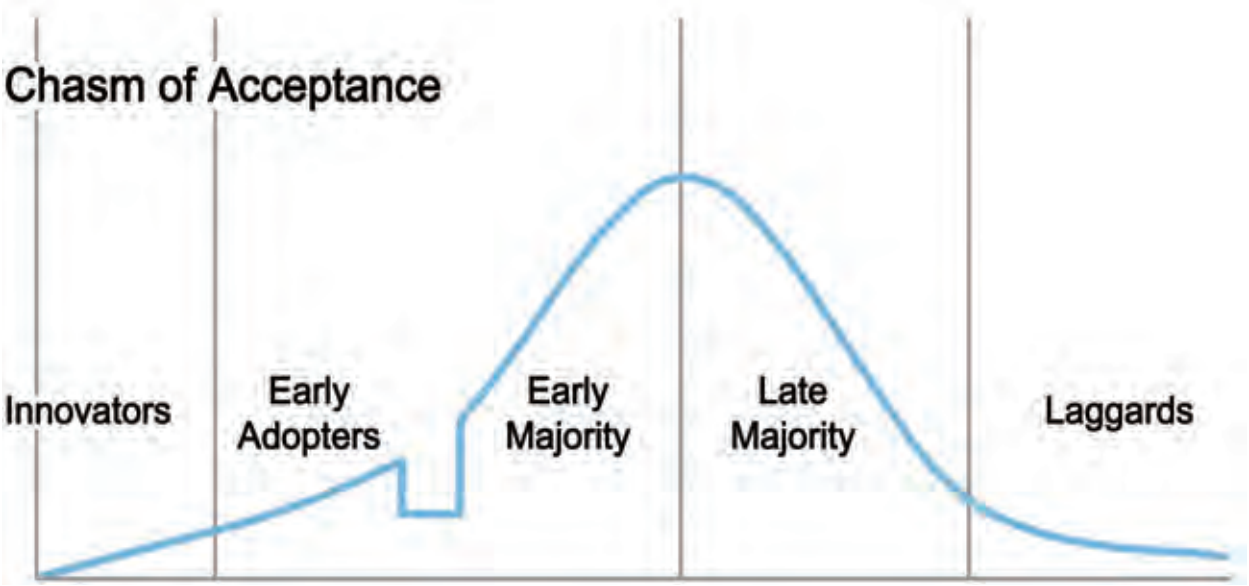
For anyone who has grown up in construction the opportunity is significant, even obvious, and inevitably game changing but it does:

- Involve technology – to fundamentally **enable the opportunity**.
- Cause us to change our processes – to **realise the opportunity** and, most importantly of all
- Involve the engagement of people – to **embrace and deliver** a new outcome.

If only it were that simple, given the variety and complexity of the procurement routes we use to deliver our asset base it is not difficult to appreciate the complexity this simplicity needs to fit within.

Needless to say these changes should not be restricted to visual representation alone. Leveraging the intelligence of the objects that we use to create the 3D virtual model allows us to count, measure, attach information and link to associated data which ultimately leads **BIM to participate in the "internet of things"**.

With all this information connected through a virtual model of our assets in which information and knowledge can be displayed in many different forms to support our decision making we start to replicate the simplicity and access we now see in many aspects of everyday life, some refer to this "gamification".



Whilst the use of technology and the internet have become part of our everyday lives it has also become an influencing factor in the way that we work. BIM and the Cloud are starting to do the same, but there is a way to go until we repeat the same physical and behavioural impact that has happened in our daily lives. What we know is that the change is inevitable, is getting faster and as we cross the chasm of acceptance to new ways of working the inevitable split between leaders, followers and the undecided will be quickly swept through by the pace of change and the scale of the outcomes.

So what needs to change to this people, process and technology infusion to reach the sweet spot of real success and make this happen?

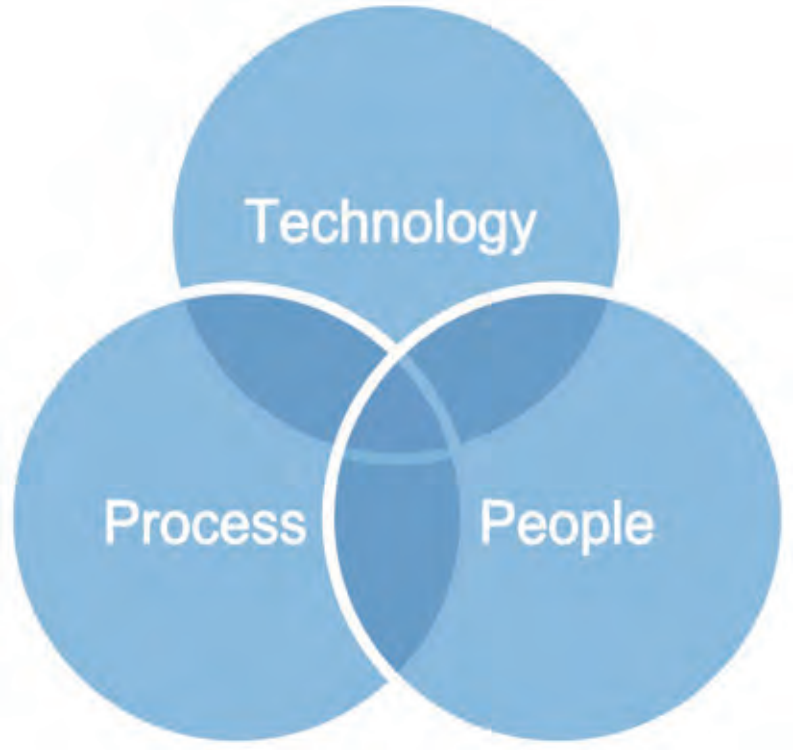
We know **real success will need to come from open easy sharing of transferrable information**. At Clearbox we believe the initial stepping stone comes from how easily we can access and manage the information to allow our teams to work together, this is the true simplicity of the common data environment (CDE) referred to in PAS 1192 Pt2.

What are Clearbox doing to support this transformation?

At Clearbox we see this issue wrapped up in **the difference between a model centric approach to BIM and a data centric approach**. Ultimately our issue is to ensure that our ease of sharing and access to common data is delivered through a visual interface that allows us to see the outcomes we need at the required level of definition to suit the type of device we are using.

For us, **simplicity in the architecture of the product is key**.

When we search on Google Earth we don't load the detailed the model of the world as a multitude of small models the world is loaded at a level of detail and information pertinent to the view we need and the view is then refined and the data we have access to updated as we proceed. When we access a retail website, on our smartphone the view is tailored to suit the device and the information we need, and while that view is rarely fully customisable it is inevitably likely to be



pre-customised to suit the view we require while providing access to other information should we need more.

The better the suitability of the view to the information we need the more likely we are to have success and want to continue to use the website. Just look at the speed of adoption and growth of Google Earth, the iPad, and Amazon and the simplicity of their user interface to recall just what the last 10 years have shown us.

In all these successes we see that the **management of the data** is the mechanism to control the visual interface. While we at Clearbox have made best use of existing industry tools our opportunity to step up our offering for users has been rate limited by the products currently on the market. Needless to say, in a space where the technology and its simplicity are key to the wider use and adoption of BIM, we have long recognised that we require a simpler, faster, more robust and scalable viewer that connects to the data environment contained in our core product BIMXtra.

We have also recognised that such a viewer needs to be supported by the data as opposed to being completely standalone in order to manage very large projects. Previously we have used a well-known viewer to enable users to access data and information in the visual environment. This is no longer sufficient to meet the needs and in order to future-proof the technology solution and deliver a better experience across common market information standards we have now built an exciting new viewer, based around the type of technology that powers gaming, while providing the simplicity of the interfaces and access arrangements we see in everyday life.

Our approach is to make best use of and connect to, best in class tools, wherever they exist, and where they don't, develop our own to allow the sharing of intelligent data and information based around industry standards. This is a fast evolving environment but we know from the world around us that **data is the new oil**, and that a data centric approach to managing BIM is critical to the simplicity, scalability and future-proofing of our BIM solutions, **just look at the road map... level 3 is next**.

Graeme Forbes is the Managing Director of Clearbox a specialist digital information solution provider that is focussed on bringing game changing solutions to the construction industry and other asset intensive industries based around BIM based processes.

Access to Clearbox website can be found at www.clearboxbim.com

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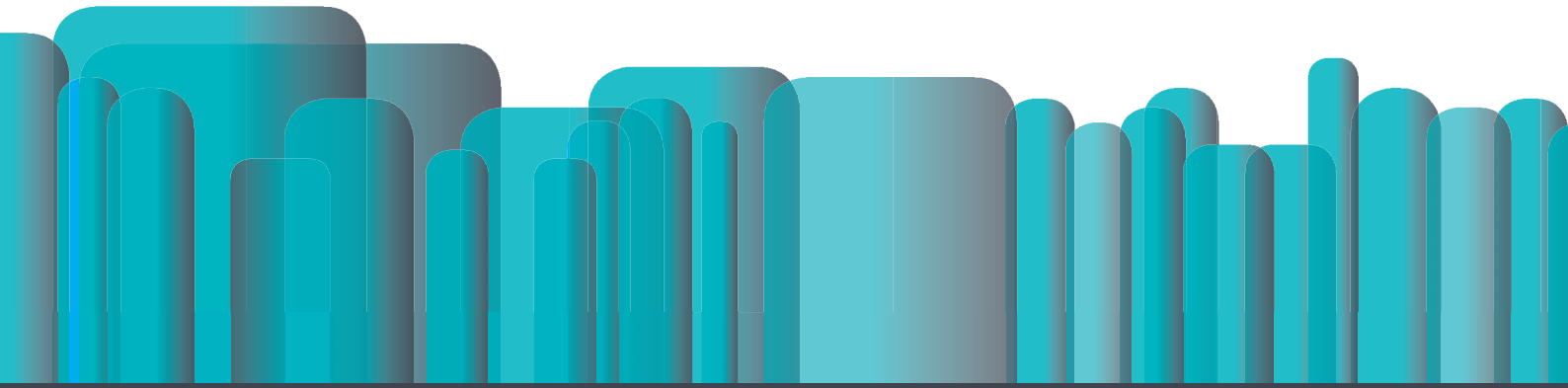

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BIM – The legal framework

Julian Booth and Louise Forbes of law firm Olswang, consider the Construction Industry Council's BIM protocol and how it might be amended for anyone commencing a BIM-led development...

As with any industry paradigm shift, the arrival and growing popularity of Building Information Modelling (BIM) in the construction industry has prompted careful consideration of the legal frameworks within which most construction projects sit. Although BIM is not an entirely new process (CAD engineers have often exchanged data throughout the design process), there are certain nuances within BIM (whether the project is operating at BIM Level 2, where independent 3D models are produced by each design team member, or at BIM Level 3, where the project is web-based, fully integrated and utilising 4D elements) which are best catered for under a BIM-influenced construction contract.

For example, 'data drops', whereby the project consultants upload design data into the model at prescribed points in the process, need to be executed at pre-agreed times, using specified file names, and any delay by an individual consultant will have a knock-on effect on the progress of both that individual consultant's design element and also the overall design of the project. Such matters should be addressed within the construction contract in order to provide clarity in the event of a dispute over liability for any loss or delay resulting from failure by a consultant to execute a data drop correctly and in time.

The main suites of standard form contracts have begun to acknowledge that a BIM-led project will require some specific amendments in order to address these nuances, albeit some offer more guidance than others. Whilst the JCT's Public Sector Supplement suggests that "simple integration of BIM protocols" into its contracts should suffice, other suites provide more detailed guidance. The RIBA Plan of Work 2013 suggests that the project sets out the BIM supporting processes within the "Technology Strategy" of the project (including how information will be provided and in what format); while the CIOB's Complex Projects Contract (CPC) provides by default that the American Institute of Architects' BIM protocol be inserted into the contract (although it should also be noted that the CPC remains unique in providing BIM provisions within its core terms). The NEC suite, however, gives guidance on incorporating the Construction Industry Council's BIM protocol (CIC Protocol). Released in 2013, this and the AEC (UK) BIM Protocol, which is of a more technical nature, remain the only standard form BIM protocols produced for the UK construction market.

The UK Government's BIM strategy, set out in the Cabinet Office publication "Government Construction Strategy" (published May 2011), is to bring in a phased process for BIM uptake for all supply chain members involved in public sector procurement, so that eventually full collaborative working (with its associated efficiencies/cost-savings in procurement delivery) will be achieved through BIM Level 3. Given that the government's official target is for all government projects to be at least BIM Level 2 by 2016, it is perhaps surprising that, aside from the CIC Protocol, there are so few standard form protocols available to adapt or append to existing contractual documentation and that the standard form contracts are not more prescriptive about how BIM should be incorporated into the contract. Given this lacuna,

it seems sensible to consider the CIC Protocol, including how it might be amended for anyone commencing a BIM-led development.

The CIC Protocol requires an Information Manager to form part of the professional team whose primary responsibilities include coordinating software and data drops (in short, helping to coordinate the practicalities of the BIM process). This is a crucial role and one which is increasingly becoming a 'stand-alone' function, distinct from any other lead consultant's services.

The CIC Protocol also aims to synchronise intellectual property rights provisions with the practical requirements of the BIM process – another crucial provision in BIM, given how regularly in the BIM process consultants' designs will be published and utilised.

The primary weakness in the CIC Protocol is that it does not offer adequate provisions for model production and data information criteria, essentially leaving these for the parties to complete. The scope for inclusion of such criteria is limited to the protocol's appendices. Arguably, given the importance of the use of certain software and the provision of quality data, the CIC Protocol should cater for a more extensive set of BIM-related employer's requirements. This weakness could be side-stepped if elements of the RIBA Plan of Work 2013's guidance could also be incorporated (specifically those regarding introducing a 'Technology Strategy').

The CIC Protocol's other perceived weakness is that there is a lack of clarity surrounding the measurement of competency in the BIM process. The standard of care of each designer must be that of a properly qualified and competent consultant using and creating output through BIM software: quite what this level of skill and care is remains unclear, although the CIC Protocol cites British Standard PAS 1192-2 as the standard for information sharing. Given that BIM practice is still maturing, there is no obvious way in which the duty of care could be worded to address this concern; however, a starting point should be that the contract itself is worded to identify BIM-specific services.

In the absence of any clear alternatives, the CIC Protocol provides a firm backbone around which to build a contract for a BIM-led project, and those entering into contracts for such projects (in particular the NEC and JCT suites) should consider that including the protocol may be the most straightforward and transparent way of incorporating BIM and any BIM issues into the contract. However, attention should be given to those areas in which the CIC Protocol is lacking, and further prescriptive wording should be included to ensure that there is greater clarity surrounding the obligations and liabilities of each party in respect of BIM. ■

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BIM Objects
The fundamental building blocks of Building Information Modelling (BIM)

The Government mandate to achieve BIM Level 2, on publicly procured projects, by April 2016 is edging ever closer.

Organisations involved in the design, construction and operation of a public building are being impacted by the information requirements inherent in meeting BIM Level 2. For designers, contractors, and the contracting supply chain, this means a more disciplined and comprehensive approach to the collection and recording of data about building assets. The Government goal is to provide asset data in a structured and recognisable format which can be transferred into a CAFM (Computer-Aided Facilities Management) system. COBie (Construction Operations Building information exchange) is the specified data format.

Whilst designers and contractors have been preparing for COBie for some time there is one community within construction which has only recently become aware of what Level 2 means for them – the manufacturers of building products. These manufacturers are the originators of the product data required in COBie and have the greatest incentive to ensure that this data – descriptive, performance, sustainability, etc., – is recorded accurately in BIM models. If it's accurate in the BIM model it will also be accurate in COBie.

The Level 2 data required for different types of building products is now being identified through the provision of Product Data Templates (PDT) – **www.bimtalk.co.uk/pdts** – which manufacturers can fill out to provide data on their products (a Product Data Sheet – PDS). How this PDS data is incorporated into a BIM model can be achieved via a number of methods but most have the disadvantage of being manual, and therefore error prone, and time consuming. The most succinct method is to include this data with the geometric representation of the product – a BIM object. All manufacturers are able to produce a PDS but only a few have the skills to create geometric representations which will work well in the popular BIM modelling softwares. For this reason most manufacturers look to an outside supplier to create their geometric objects, which also include the PDS data.

Having to use an outside supplier to create geometric objects clearly has cost implications for manufacturers. Today creating objects is largely a 'craft industry' with a limited number of experts able to develop objects. This craft industry isn't scalable so the large number of objects that will be required, both for 2016 and beyond, will be impossible to produce. And with this hand-crafted approach consistency is difficult to achieve and creation costs will remain at the higher end. In this situation with a requirement for many more objects, but only a limited pool of experts, how can the needs of the construction industry and product manufacturers be met?

Kitchen layout in a BIM model including a cooker hob object created with BIMobject Mosquito.

BIMobject® has been reviewing this conundrum for some time and concluded that the development of BIM objects has to be 'industrialised'. This process has to include all the constituent parts of a BIM object - the geometric representation, the structured data (e.g., PDS) and any other unstructured information (e.g., PDF of installation instructions). This is a strategic focus for BIMobject in 2015. Put simply, there are two communities of manufacturers which need to be supported: those with no 3D representations of their products, and those with 3D representations produced from mechanical design CAD software. To support the former, BIMobject Mosquito™ was introduced in late 2014. A new technology which enables manufacturers to self-build and maintain place-holder BIM objects containing 3D visualisations and data properties. During this year further releases of this software will extend the range of manufactured products to which this technology can be applied. An introduction to Mosquito can be view on the YouTube channel – key 'bimobject mosquito' into the search criteria. For those manufacturers which already have digital representations from their mechanical CAD system then it really is a case of 'watch this space' for upcoming announcements from BIMobject. The aim here is really simple: convert easily and accurately what already exists into formats which can be used by different BIM modelling softwares. To keep up to date check out **https://bimobject.com** regularly.

Through its cloud based portal BIMobject® provides the development, maintenance and syndication of BIM objects of manufactured building and interior products. These objects are provided from the BIMobject portal, at no charge, to architects, designers, specifiers and contractors, and are available in native format for a number of the model authoring tools including ArchiCAD, Revit, SketchUp and also AutoCAD. Other formats are also available.

BIMobject was founded 3 years ago and since January 2014 has been a public company list on NASDAQ OMX. A winner in 2013 of a Global Red Herring Award, which recognises world-wide the most promising start-up companies for their innovation and technology, BIMobject is now the largest provider in Europe of BIM objects with nearly 300 manufacturers as customers, over 65,000 registered users, and with over 1,000,000 downloads from its portal. BIMobject is headquartered in Sweden with subsidiaries in France, Hungary (for Eastern Europe), Germany, Italy, UK, and with business partners elsewhere in Europe.

Article written by;
Alan Baikie, Managing Director, BIMobject UK

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Thousands of free BIM objects from almost 300 manufacturers across Europe. Over 60,000 architects and designers are using these intelligent and configurable objects, with automatic alerts when objects change.

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The technology behind BIM

In matching the challenges and opportunities that BIM presents, Autodesk discuss the available software to satisfy the requirements for a successful project

The introduction of Building Information Modelling (BIM) has fundamentally changed the way in which the construction industry now approaches any project. But how does the available software match up to the various challenges and opportunities that BIM brings? Let's look at these through the various AEC stages of conceptual design, detailed design, and procurement process, on site and then finally at hand-over.

Conceptual Design & Detailed Design

The conceptual design process is really the first stage of any BIM project. FormIT is a free tool available for iPad, Android as well as a web browser, which allows you to create conceptual massing studies. You geo-locate your site, and with simple finger gestures (push, pull, pinch) are able to develop design studies which can be shared with others or passed to Autodesk Revit for further exploration.

Autodesk Revit is the Swiss army knife when it comes to the development of a building information model. Whilst not BIM in its own right, Revit is considered to be central to the design authoring process allowing you to create information from concept through to detailed design. The Revit platform also integrates with cloud solutions such as Green Building Studio for sustainability studies and 3D Studio Design for photo realistic renderings and animations.

Construction & Procurement

With the continued pressure on budgets, quality and timescales, savvy contractors are using BIM to improve their construction processes.

For example, historically, spatial coordination was performed with 2D plans, but this process only identified at most 60-70% of the conflicts, with the rest typically having to be sorted out on site. Changes made on site are expensive because original work must be discarded and the project becomes delayed while waiting for a new piece to be fabricated or installed. Navisworks allows you to view your model in 3D and spatial coordinate model data using powerful clash prevention tools, and works both with Revit and a multitude of BIM authoring platforms.

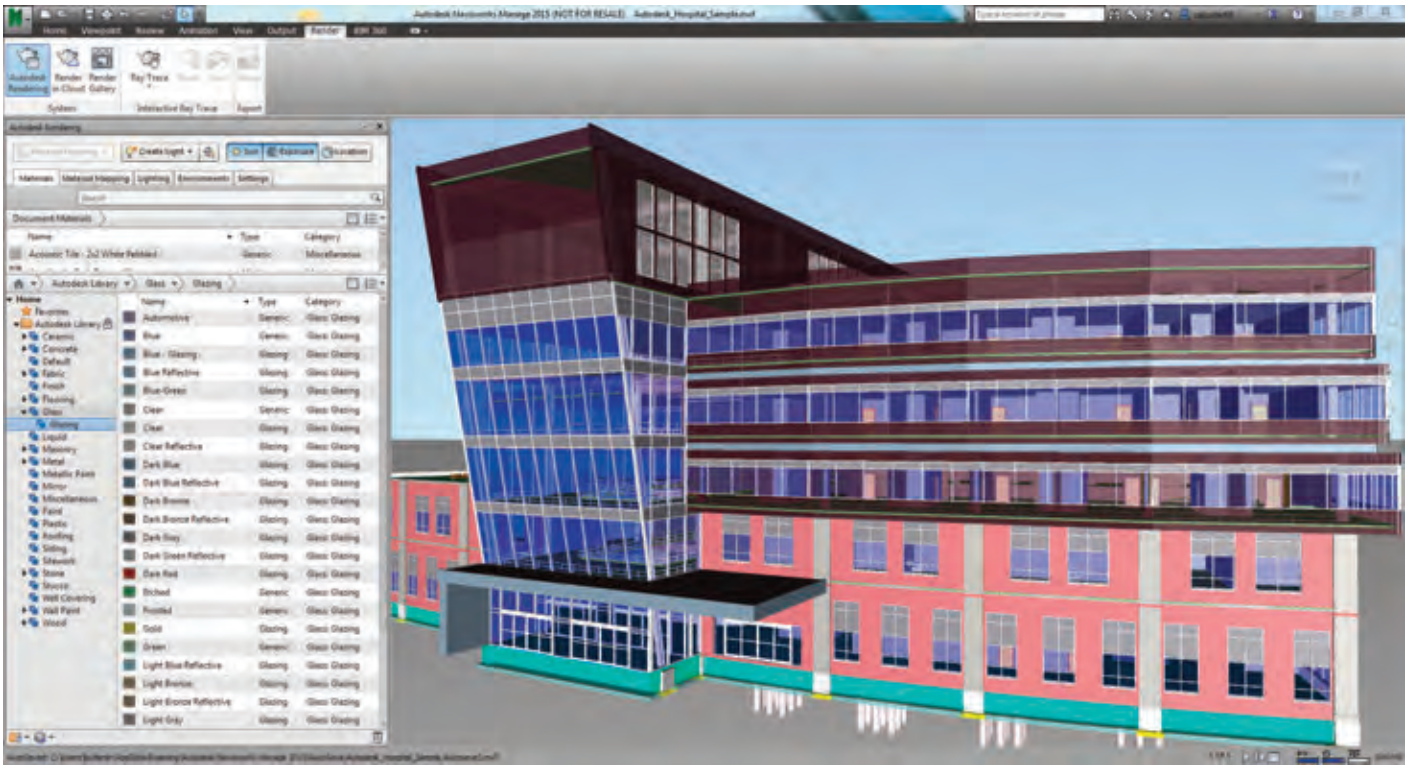
Navisworks can also be used for 4D phasing and sequencing, a powerful visualization and communication process that can give the project team a better understanding of project milestones. Finally, Navisworks allows for 5D cost estimation and quantity take-off. Once quantities are taken and verified, it's just a matter of applying historical costs and production rates from your subcontractors; dividing the project into logical locations; and applying unit costs for materials, equipment, and labour.

Design to Fabrication

The design and construction process is complex, it makes you wonder how anything gets built on time and on budget. The concept of fabricated design is something which is not new to the construction industry, but as resources become more scarce and time to market increasingly important, the move to BIM is starting to make Design-to-Fabrication commonplace. Autodesk offers a number of solutions that supports these workflows. Fabrication CADmep™ software for MEP fabrication supports detailing and installation workflows for mechanical, electrical, and plumbing (MEP) contractors. It provides tools that extend design intent to create more accurate, intelligent, constructible models of building services systems. Advance Steel, with its intelligent 3D modeling, speeds time to fabrication and construction with tools that automatically generate shop drawings and deliverables.

Reality Capture

BIM is not limited to new buildings, so what do you do if you have an existing building which you need to retrofit? A 3D camera or better yet a laser scanner using LIDAR (Light Detection and Ranging) technology is a fast and accurate way to collect precise data about site conditions and/or a building. Using measurement technology similar to a total station, the collected points are recorded as X, Y, Z values. Millions or sometimes even billions of points are collected in minutes and this point cloud can then be developed into a 3D model representing the existing



conditions. Autodesk Recap can be used to clean up point cloud data or used to merge multiply scans so that the data scans can be used in other tools such as Revit, Navisworks and 3d Studio Max Design.

Collaboration and the Cloud

Mobile computing and the need to access information anywhere is driving a move to the cloud across the construction industry. Autodesk's A360 and BIM 360 technologies work on a cloud-based framework that provides customers with a powerful set of tools and services that can dramatically improve the way teams work and share data. BIM 360 is specifically AEC focused and includes the BIM 360 Glue model collaboration and visualisation platform; BIM 360 Field provides a way for contractors to capture data from the field to push back into the building information model. This is driving incredible efficiencies amongst those that have implemented the technology, For example, site operatives are expected to complete status forms for health and safety as well as snagging and conditions surveys. The process is time consuming and manual in its nature. BIM 360 Field takes these paper-based workflows and turns them into electronic forms which can be completed on site on a mobile device and synched back with the building model over the internet. Some of the biggest construction firms in the UK report massive improvements in productivity thanks to the use of digital processes and digital data capture on site.

Handover and Asset Data

Construction Operations Building Information Exchange (COBie) is an open data format centered on delivering building information and is a prerequisite of the UK Level 2 BIM mandate. COBie captures and records project data at the point of origin. This information is essential to support operations, maintenance and asset management once the built asset is operational. Autodesk has been at the vanguard of supporting this open standard, working closely with industry groups and bodies to ensure its design authoring software can deliver to these specific data requirements.

Conclusion

While we've looked at what an important role technology can play in the transition to a BIM process, it's important to point out that it is not only about the software. You will also need to define a clear change management programme. Your staff will be required to develop new technology and process skills and you will need to establish a measurable training programme as well as refined standards and processes to ensure you can deliver these data requirements. Once established, the benefits that BIM can bring will be realised, allowing you to offer better value to your clients, enhanced quality design, more sustainable buildings and an improved service offering.

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The BIM journey – Begin with the end in mind

It has often been said that every journey starts with a single step. We at Quadra Solutions, believe that every journey starts with a question.

Where, when, who, why? Asking the right questions ensures the success of any journey and this is no different for BIM. What goals do we want to achieve from using BIM? Where do we want our organisation to be in the future? How do we achieve these goals, evaluate them and continue to exceed them?

The BIM Journey is not a short one; it's a long-term and continuous journey, which doesn't stop once you've achieved your initial goals. And because of this the destination is always changing. For many organisations the desired 'destination' is a reduction in waste, risk or errors and an increase in efficiency. But as a result of effective BIM usage, organisations can benefit from enhanced design quality, improved communications and quicker project delivery.

A BIM Execution Plan (BEP) is an important part of your BIM Journey and is something that is rarely done in isolation and needs to be communicated throughout the organisation. Quadra are currently helping numerous companies evaluate their plans, supporting them with their first steps.

Evaluating the potential success of BIM implementation is essential. According to the National Federation of Builders, 75% of BIM users say their organisation regularly and quantitatively assesses the impact of BIM and have done so from the very beginning. In order to manage the success of BIM, organisations evaluate their ability to deliver projects on time, the reduction in remedial work or their success when tendering for contracts. In a online survey conducted by Autodesk, over half of respondents experienced productivity gains of over 50% using Revit and 17% experienced productivity gains of over 100%.

And as with any journey, BIM only succeeds if the correct preparations have been made; this includes embracing the BIM ethos, investing in the right support mechanisms and regularly maintaining and managing the process. Don't forget it's not only the financial contribution but also a cultural consideration that needs to be considered when implementing BIM.

At Quadra Solutions we work with a range of organisations at every stage of their BIM Maturity level; from organisations that are just starting to undertake BIM projects, to those further into their journey. Our team of highly experienced and knowledgeable experts look at each case individually and undertake consultation to ensure our partners have all the answers required, to get the most from the transition to BIM. For more information about our partnership led approach to software, training, technical support and consultancy contact us using the details below.

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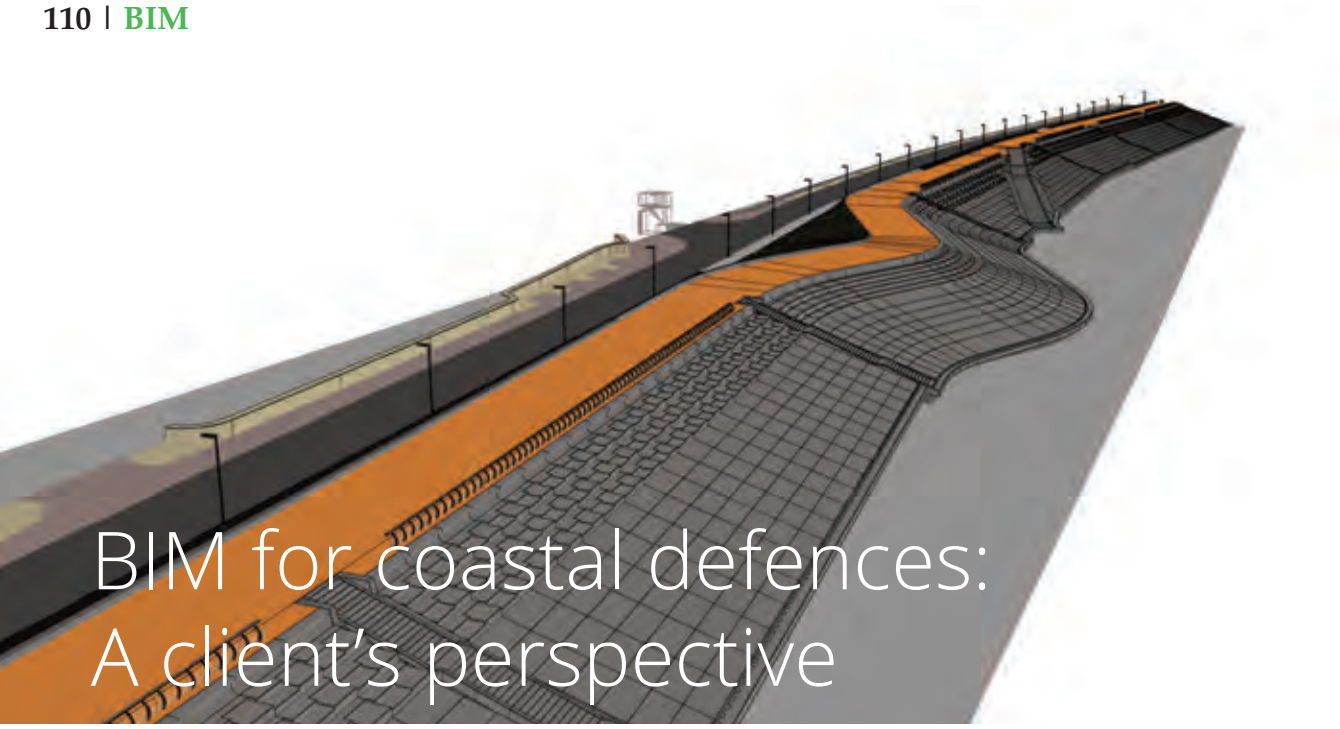

BIM for coastal defences: A client's perspective

In the first of a series of interviews with Carl Green, Head of Engineering Services for Wyre Council, we follow the progress throughout the construction and operation of the Fylde Peninsula Coastal Programme – the world's first BIM coastal defence scheme...

The Fylde Peninsula Coastal Programme (FPCP) is a partnership between Wyre Council, Blackpool Council, Fylde Council and the Environment Agency. It is responsible for managing the Fylde Peninsula's coastline and reducing risk of flooding to people and the developed, historic and natural environments. The scheme currently covers two areas, Rossall and Anchorsholme.

The Rossall area is situated on the North West coast between Cleveleys and Fleetwood in the Wyre Council area and is subjected to some of the strongest currents and highest waves on the coast-line. The flood defences are old and could fail during a major storm, resulting in significant flooding to low lying properties in the area. The most recent major flood events occurred in 1927, which resulted in the deaths of six people, and 1977 when over 1,800 properties flooded following a breach of the sea defences.

Similarly, in the Anchorsholme area, situated at the northern boundary of Blackpool Council, major flooding occurred in 1927 and 1977. Flooding to the promenade, highway and tramway occurs regularly during storms when waves overtop the existing sea defences, resulting in temporary road closures. A United Utilities pumping station forms part of the sea wall at Anchorsholme, which means Anchorsholme and parts of Rossall are also at risk of sewerage flooding.

The new defences will protect 12,000 properties in total – 7500 in Rossall and 4500 in Anchorsholme plus critical drainage and transport infrastructure. Extensive public consultation has been undertaken and a variety of public feedback has been considered in the development of both schemes. One clear underlying theme was evident throughout the consultation process; people just want to feel that they, and their properties, are safe.

Carl Green, Head of Engineering Services for Wyre Council, is leading the programme. Carl has over 20 years' experience in the design, construction, operation and maintenance of major civil and coastal engineering projects around the UK.

The project began in a pre-BIM world, where Green had seen contracts signed before relevant sections of the Government strategy had been released, particularly PAS1192/3. The competency of contractors to understand 3D modelling and information was key. Despite these competencies, it was clear that applying a nascent methodology to a 'world first' wouldn't be without issues, and it was this under-

standing that led to Carl's structured approach to maximising the benefits of BIM.

"When we started the process, we thought long and hard about the challenges that we face when looking after the current sea defences. The main issue is that the information in our archives wasn't complete. Some information had been lost, some had been borrowed over the years and not returned, and some wasn't even captured in the first place.

"This made it more difficult to completely understand exactly how the current defences were constructed, what maintenance had been undertaken and why and even where exactly the sewerage outfalls were. I was determined that the next generation of people who would be renewing the defences in 50 years' time wouldn't face the same challenges as my team".

Carl mentioned that one of the key challenges was ensuring that the right data was captured rather than all data.

"The natural view of many in the team was to attempt to capture all of the data possible. It quickly became clear that on a programme of this size, this approach would be unsuccessful due to the sheer volumes of data that could be generated.

"As a group, we looked at our own requirements during the pre-design, design, construction and operational phases and decided on the data that we would need to capture at each stage to meet these requirements, and optimise asset management and minimise maintenance costs throughout the lifecycle of the project.

"We then formalised this in a document to use as a template to ensure and verify that we have captured the required information. What was most interesting is how different the new EIR was from our initial Employers Information Requirement documentation. (EIR)".

The next key challenge was software. There are a multitude of design packages, and GIS packages, maintenance packages as well as existing council software and different packages from internal and external supply chain organisations. The new EIR didn't only include 3D models and traditional design data. It also included photographs, spreadsheets, PDFs, MS Office, scanned paper documents, video, audio and even laser scan files. Carl explained how he and the team overcame this challenge:

"We were initially worried about how to make best use of the data with all of the different tools that were being used on the programme. It quickly became apparent that we needed to identify a simple to use tool that enables us to use and capture information throughout the construction and operational processes that ideally can be used in the field.

"We managed to find a tool called Sitedesk www.sitedeskconstruct.com which can handle large complicated models on mobile devices as well as desktops, all of the file formats and versions that we require. Sitedesk also allows all members of the team to use existing documentation and workflows if required. We chose Sitedesk because it makes it simple to take advantage of the whole life cost benefits of BIM without the exposure to high hardware, software or integration costs".

Lessons learned so far...

For Green, the biggest lesson learned so far is to be more prescriptive in terms of the desired whole life outcomes for the asset. This process is the best way to ensure that the EIR correctly informs and defines the quantity and quality of the information that is actually required to manage the construction and operation of the asset.

Next time we will evaluate progress against expectations... ■

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Workstations Specialists primary goal is to provide industry professionals with the necessary advice and solutions to enable you to complete projects effectively and within deadlines. Workstation Specialists are an award-winning computer workstation and rendering system manufacturer based in Derby, UK. They design and manufacturer high performance computing solutions for sectors including BIM, 3D CAD, CAM/CAE and Visual Effects industries. As part of the AceCad Software group of companies they have been proudly producing computer workstations for over 25 years, and are at the forefront of the industry with their class leading product portfolio and in-depth industry knowledge.

Available with a wide variety of specifications, with prices starting from as little as £950, Workstation Specialists offer a complete custom built service with excellent pre-sales advice and consultancy; allowing you to invest in the most suitable configuration for your requirements (whether this is dictated by application, project or budget). A free no obligation evaluation or demonstration service is also available, allowing new customers the ability to trial the latest computing technologies first-hand.

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- For on the go users, Workstation Specialists have developed their WS-M Mobile workstation range. Designed to deliver workstation performance within a portable form factor. This range also includes the WS-M Slim the world's most powerful ultra slim professional laptop at under 2 cm thickness, under 2 kg and furthermore is now available with a 4K screen.

- Workstation Specialists integrate independent software vendor (ISV) certified components in their workstations, giving customers the confidence that the systems will have the compatibility, reliability and performance you require.

- Full independent reviews can be located on their website at the following page. http://www.workstationspecialist.com/corporate/press_room/reviews/

- Following a comprehensive 48hr hardware testing process, all their systems are backed up by a complete 3 year parts and labour warranty.

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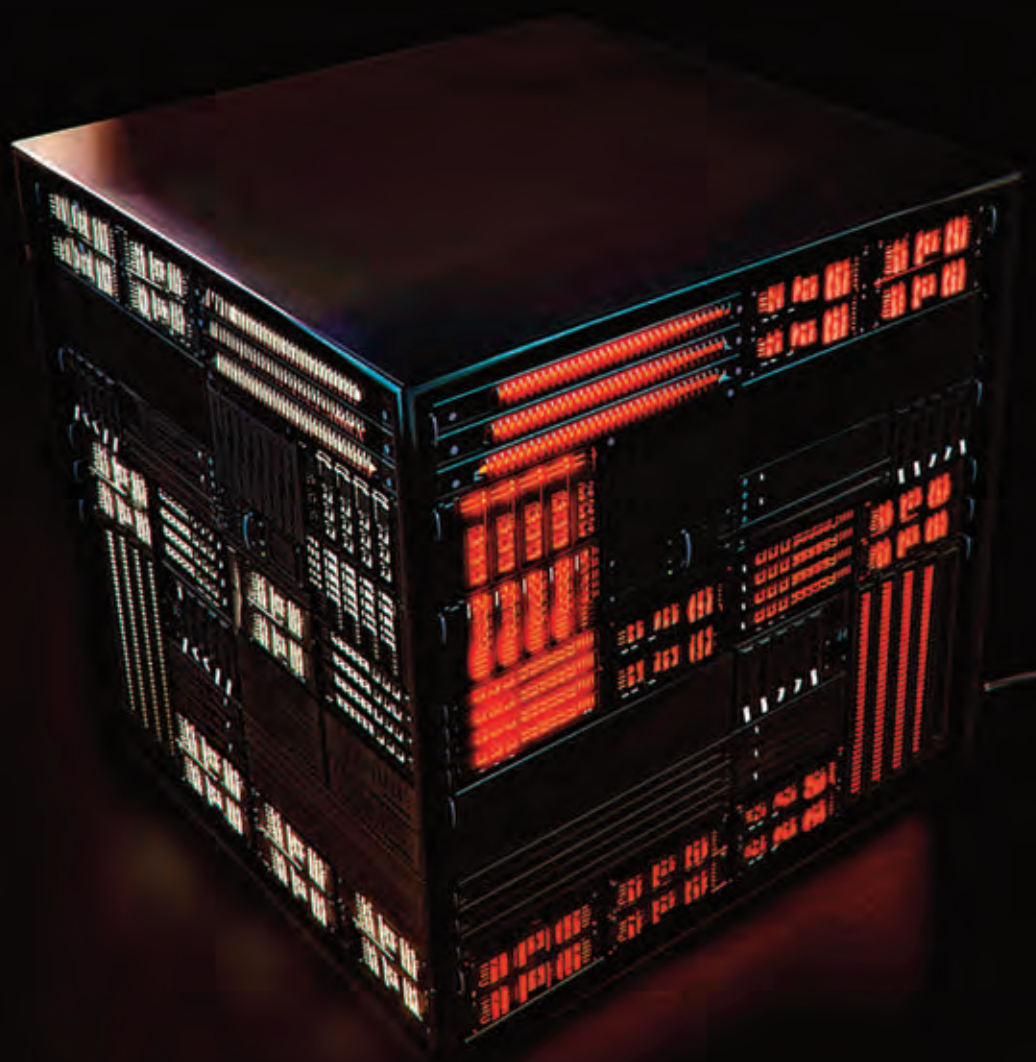

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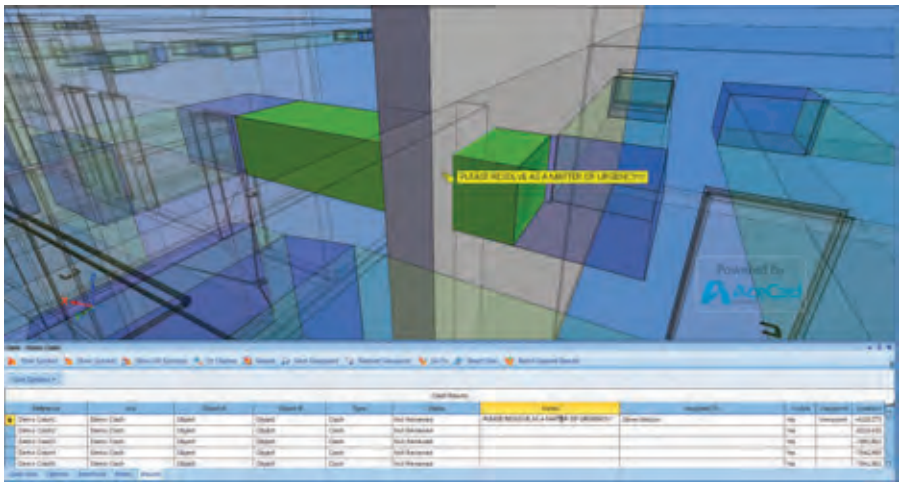
Putting BIM to work

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



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

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

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

BIMReview evolution delivers a range of practical benefits:

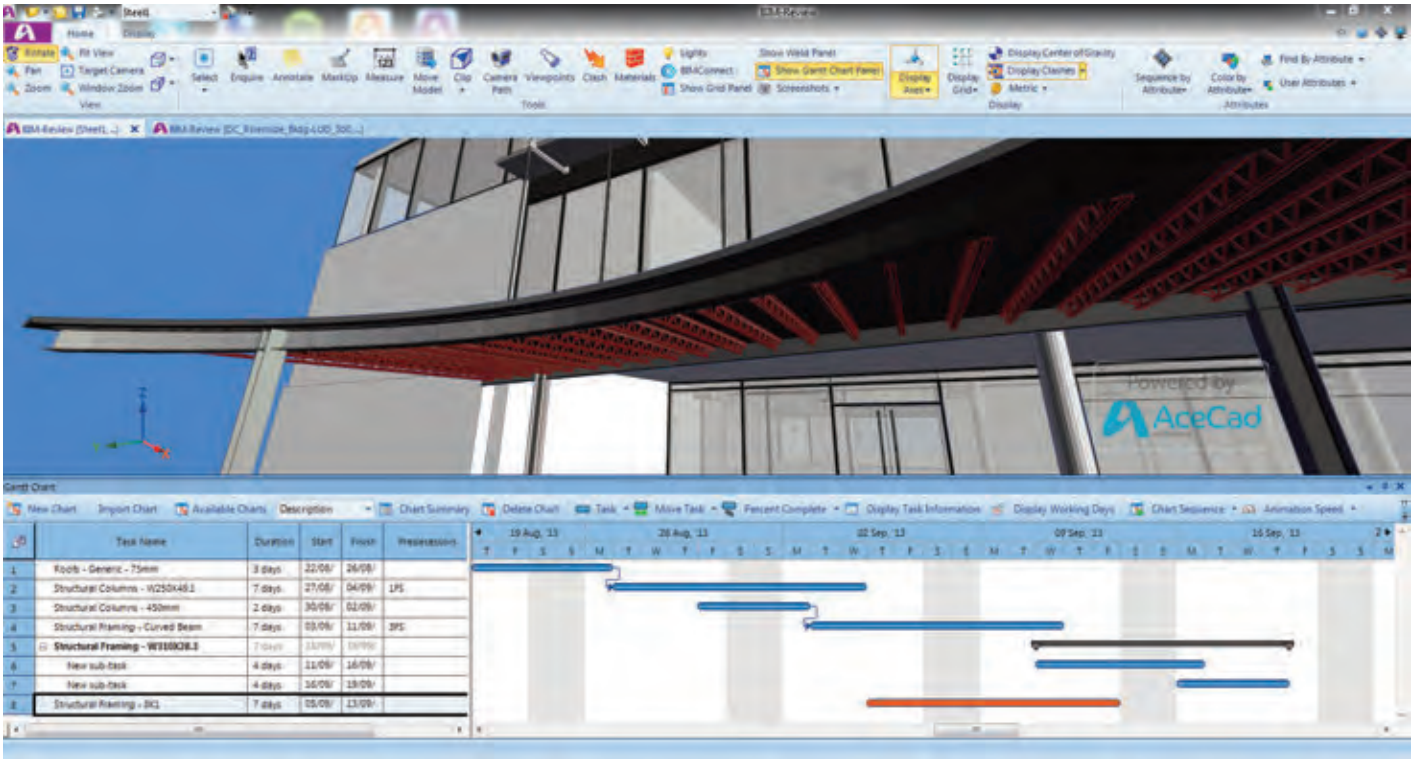
- Improved workflow through real-time access to BIM model content across multiple teams.
- Enhanced decision support through improved collaboration.
- Immediate identification of clashes and conflicts.
- Improve planning with 4D timelines for engineering, procurement, suppliers and construction teams.

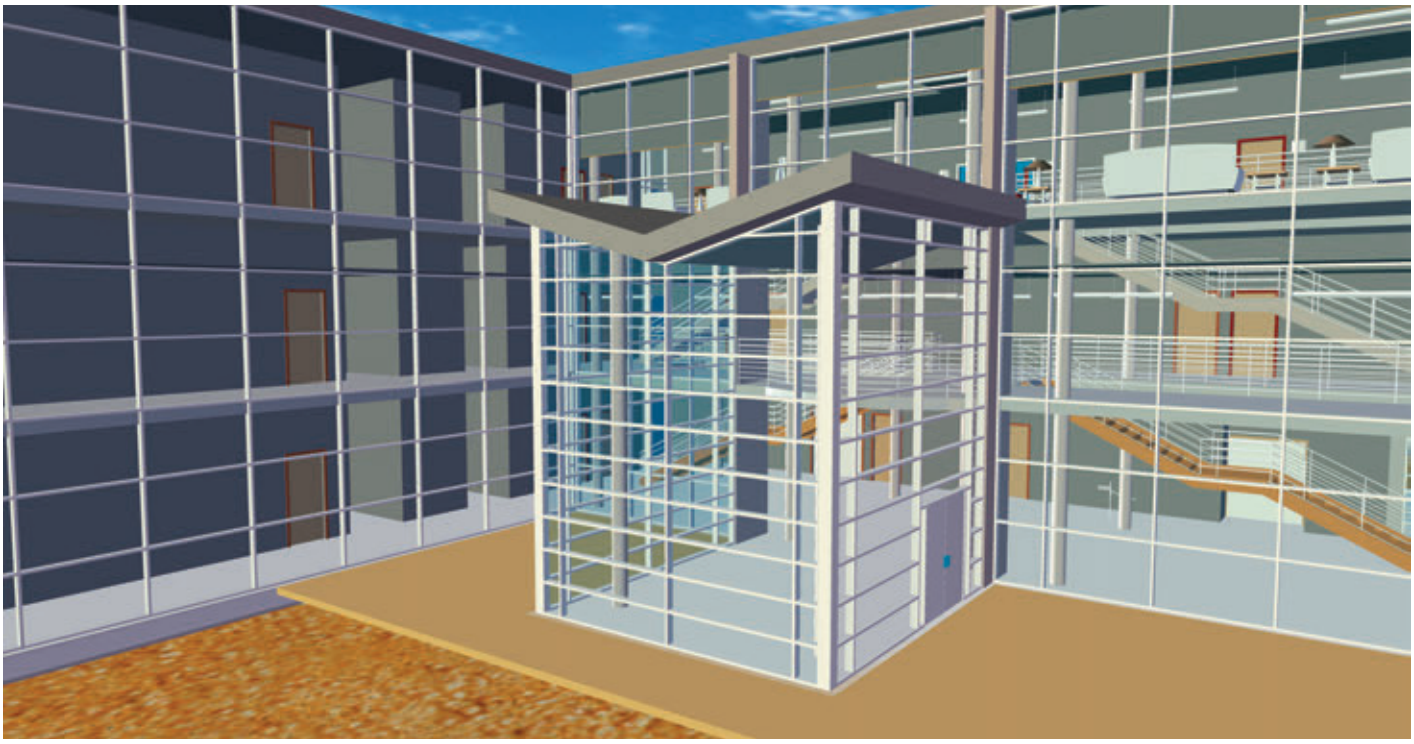
Because BIMReview enables more efficient working, it has the capability to shrink schedules and reduce the risk of overruns.

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

Low cost, immediate returns

One of the most appealing things about BIM-





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

Cost savings from day one:

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

Enhanced workflows

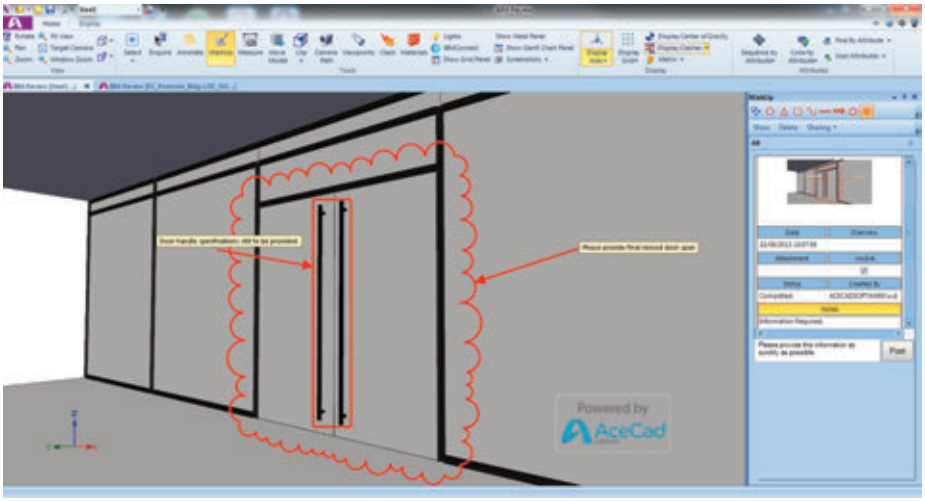
BIMReview is designed to facilitate collaboration across the project. Architects, owners, consultants, contractors, fabricators and engineers can work on a single process through the same model with a level of accuracy not previously possible. When changes are needed, everyone involved has access to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

Improved project efficiency

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

Try BIMReview for free

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



BIMReview

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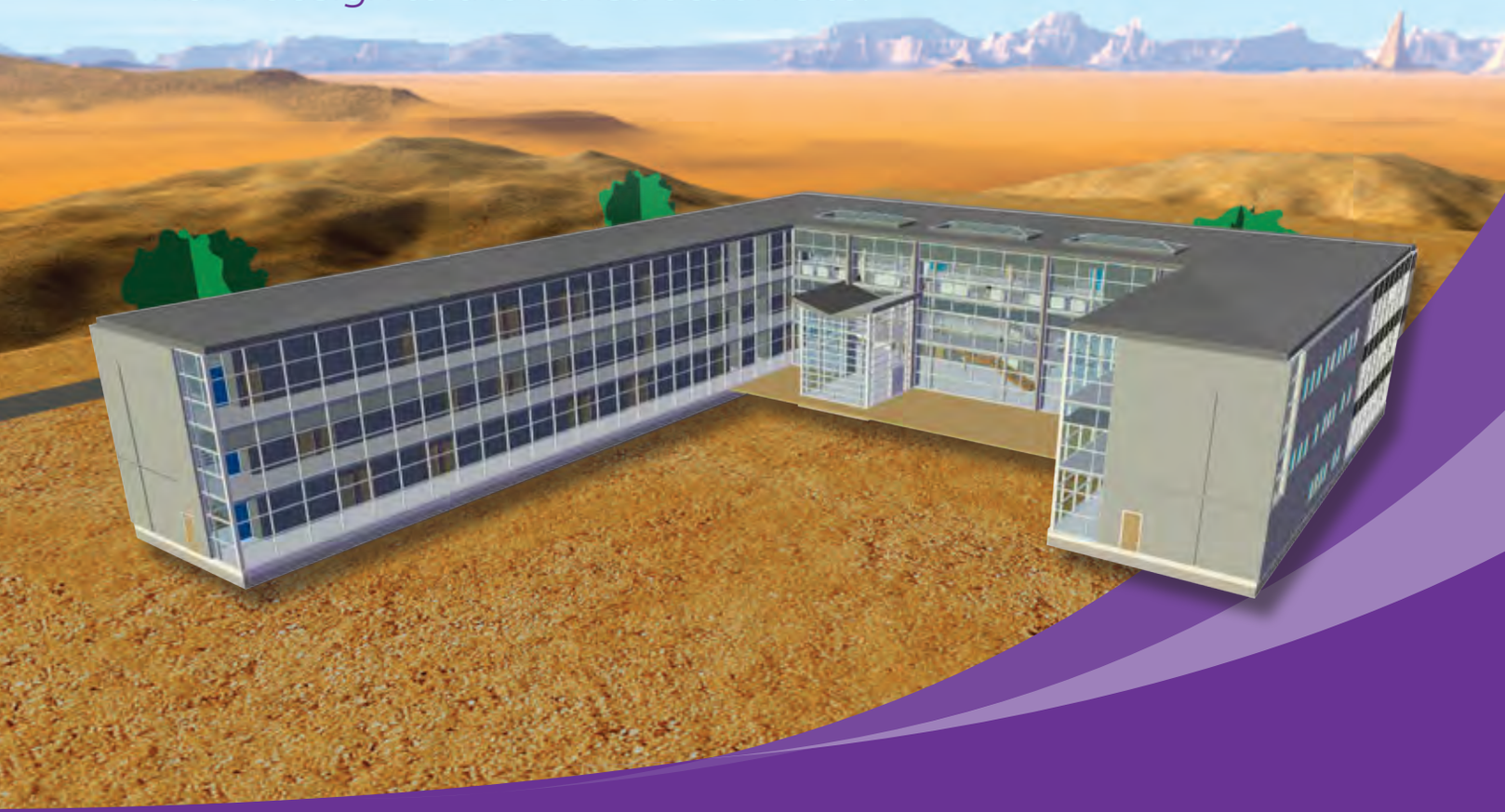
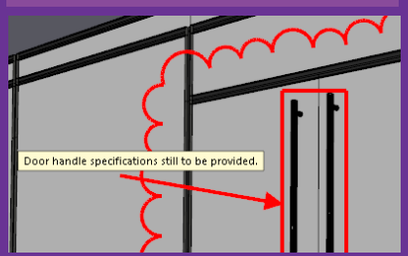
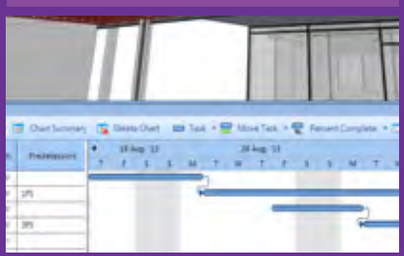


3D Clash Detection

3D Visual Mark-Ups



4D Planning



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BIM for clients – an EIR is key

Karen Alford, BIM Project Executive at the Environment Agency discusses what is essential for a client who is implementing BIM in their organisation...

The Environment Agency is mandated to deliver Building Information Modelling (BIM) and Government Soft Landings (GSL) by 2016 as part of its commitment to the Government Construction Strategy. I have been involved in this delivery since early 2012.

Most construction projects within the industry heralded as BIM exemplars so far have had the benefit of a healthy budget and have been self-contained. Both these factors have made it easier to implement changes to commercial working practices. My task has been to implement BIM and GSL across a business with framework contracts in place and a range of projects across England valued from £250k up to a £300m programme of works. From April 2015 the Environment Agency will routinely procure BIM and GSL on our projects, and this is very significant turning point for us.

What does BIM really mean and what is the role of the client?

Across the industry there is still a common notion that BIM is just about using design software such as Revit. For a design team this may be partly true, but for the Environment Agency as a client, this is far from the case. In some extreme cases across the industry, there are reports that client misconceptions have resulted in the BIM requirement being expressed as a one liner simply saying, 'BIM is required'.

My experience is that most of our suppliers have BIM skills and some excellent examples to share. However, supplier BIM expertise is often within pockets in the organisation and in the main, has been driven to reduce risks within their organisation. Very few suppliers have been able to work with defined client requirements.

I recently re-read the government BIM Strategy and was struck by how relevant the recommendations made by the Government BIM working group for a client implementing BIM across an organisation have turned out to be, especially in my experience of doing this in the Environment Agency. I am going to cover a couple of these.

Be very specific with supply chain providers – they will only provide what is asked for.

During the early stages of our BIM journey we spent some time investigating the activities and the interfaces between ourselves and our supply chain partners. We had candid discussions with some suppliers and it became clear how our approach unwittingly led to ambiguity about our requirements.

The introduction of an Employers Information Requirements (EIR) into the contract documents addresses this ambiguity and is essential for a client who is implementing BIM in their organisation. The EIR should focus on the corporate data and information requirements, and will be the mechanism for ensuring the information can be used efficiently and support decision making. An EIR provides clarity right from the start and gives the supplier the information they need to identify how they can adapt their business processes and project delivery model to produce reusable, and consistent outputs at an organisational level, rather than project by project. An EIR is also used by a lead supplier to commission work in its supply chain to get the requirements right at the point of creation, and avoid re-work at a later stage.

NBS, funded by InnovateUK are developing an enhanced EIR tool called a digital plan of works which will be available free of charge later this year. To keep implementation moving in the Environment

A concrete pour being performed in a river channel. Produced by BMM Joint Venture

Agency, we developed a prototype. It includes all the standard information outputs exchanged during a project and details specific standards, data requirements, and where responsibilities rest. The digital plan of works is also a tool for structuring discussions about the level of visualisation and federation of data needed in any model being produced. For us, environmental modelling is as important as design modelling, and BIM allows us to bring the two together. Like all organisations moving into a BIM world we still have some work to do, particularly around identifying precise data requirements. Our work so far has created a sound framework for further progress.

"An EIR provides clarity right from the start and gives the supplier the information they need to identify how they can adapt their business processes and project delivery model to produce reusable, and consistent outputs at an organisational level, rather than project by project."

Create the appropriate support infrastructure

In addition to having BIM in our commercial tools, we as the client or employer, have in place a Common Data Environment (CDE). The PAS 1192 family of standards sets out the requirements for a CDE. Most project organisations will have some form of project collaboration tool, however many will need modification to meet PAS 1192 as it requires some method for validating data at each point of exchange. Software providers in the project collaboration tool market are taking steps to modify their products.

Consideration also needs to be given to the tools asset managers may need now and in the future. There are viewing tools which will satisfy the needs of most clients, but if you plan on using integrated models for managing your assets in the future, some investment in software and training will be required. Managing data within models is a specialist skill so select your staff carefully.

Fully incorporating a BIM approach challenges traditional ways of working and processes both within the client organisation and within the suppliers.

Government led BIM is about modernising the construction industry to be data driven and to utilise technology to deliver challenging cost and time efficiencies, whilst creating better assets which can be operated and maintained affordably without creating additional business risks.

Having leadership from the top supported by a team on the ground to develop tools and help project teams get to grips with the changes is essential for both client and supplier organisations.

If it was a simple as putting some BIM clauses into a contract, it wouldn't have taken us in the Environment Agency so long to get to this point. For any client embarking on introducing BIM across their business I advise taking small manageable steps bringing your teams and suppliers along with you and see it as a longer term programme of improvement not a quick fix. ■

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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.

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BIM certification

Gaining recognisable BIM certification proves competency, compliance and capability of successful BIM delivery. PBC Today outlines what BRE can offer the industry...

Achieving BIM level 2 is changing the construction landscape, but there are still some barriers to adoption. It will affect almost everyone working within the built environment, from those working in the architecture, engineering and construction industry, to commissioning clients, owners and facilities managers. In 2012 the NFB published its report 'BIM: Ready or not?' which indicated that there was a clear gap between the appetite for BIM in terms of the commercial rationale on the one hand, and the knowledge and skills to take action on the other. There has been some improvement, but there is still some way to go for the 2016 deadline, and gaining recognisable certification should be a priority.

However, there remains many misconceptions about what level 2 BIM is and how it should be implemented. To clear any confusion regarding the specific requirements to be met, they are all outlined within PAS1192-2:2013, which is summarised below:

a) Development of information models which reference, federate or exchange information with other models;

b) Provision of an Employers Information Requirements (EIR) document with clear definition and decision points;

c) Supplier & Supply chain capability assessment;

d) Provision of a BIM Execution Plan (BEP) including assigned roles, standard, methods, & procedures and a master information delivery matrix aligned with the project programme;

e) Provision of a Common Data Environment;

f) Compliance with the documents and standards listed in the Level 2 Documents and Standards section[1];

g) Development of information models utilising database-based software, and analysis software;

To aid the industry in achieving level 2, BRE have developed a number of services to bring recognisable qualifications and standards that will provide assurances to clients that the holder is competent, compliant, and capable of BIM delivery:

Certification

Business Systems Certification (BSC): Aids by auditing designers, constructors and suppliers, allowing businesses to demonstrate their competence in understanding and being able to achieve the above requirements;

Certification Professional Scheme (CPS): Aids by educating and requiring attendees to demonstrate and understand the above requirements;

Education

BIM Accredited Professional (BIM AP): Aids by educating attendees with BIM foundation knowledge and provides an overview of the above requirements;

Other Education Material: BRE also run awareness sessions, CPD seminars, and other education material to aid industry in achieving BIM maturity level 2;

Consultancy
Employers Advisory Service: Aids by developing key documents with the employer, such as the EIR or BEP. In addition, this service can aid further by auditing incoming documentation.

Supply Team Services: Aids by reviewing BIM processes and business documentation to ensure that they align correctly to the above requirements to allow BIM maturity level 2 compliance.

All of the BIM AP and Level 2 courses have been developed in partnership with Professor Mervyn Richards, OBE, the author of BS1192:2007, the standard for collaborative production of AEC information, and Paul Shillcock co-author of PAS1192-2:2013, the specification for information management using BIM; Mervyn and Paul are actively involved in supporting the UK Government in defining and adopting Level 2 BIM. ■

For more information, visit the BRE BIM website: www.bre.co.uk/homepage.jsp?id=3506

[1] http://www.bre.co.uk/page.jsp?id=3508

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Building control in 2015

Paul Wilkins, Chair of the ACAI outlines what 2015 has in store for the building control sector...

January 2015 sees the end of my year as Chair of the Building Control Alliance (BCA) and I thought it would be timely to reflect on the past year in the world of building control, and look at what lies ahead for is in 2015.

We have continued to ensure the value of building control continues to be recognised by the construction industry, government and wider society. This will continue in 2015 with initiatives to raise standards via a more robust registration scheme for Approved Inspectors in the private sector, a higher profile for the Association of Consultant Approved Inspectors (ACAI), new Building Control Performance Standards and associated Key Performance Indicators (KPI's) and, potentially, the development of some form of Quality Mark for building control across both sectors.

2015 should see the implementation of the Housing Standards Review which will remove much of the uncertainty faced by house builders with regard to local planning requirements. A number of optional building regulations with associated guidance will be developed which planning authorities can adopt following a robust justification process.

The building control sector continues to engage with government and other representative bodies and stakeholders on a number of initiatives that contribute to the safety of buildings. Interaction with the Fire Sector Federation (FSF) has seen the imminent publication of a revised procedural guide which defines the roles of Building Control Bodies and Fire Authorities in the building control process. In addition, valuable guidance has been issued on assessing fire safety measures in buildings that were subject to Local Act requirements which are no longer in existence.

Relationships and cooperation between private and public sector building control bodies are at a historic best, and the BCA has continued to produce valuable best practice technical guidance on many subjects. In addition, the BCA provides a valued mediation service to help resolve procedural issues between the public and private sectors.

In economic terms, the sector has followed the rest of the construction industry in enjoying slow but steady growth. In the private sector this has resulted in significant growth in the number and size of Approved Inspectors providing new job opportunities contributing to the nation's economic growth. This also provides us with the significant challenge faced by all in the construction sector of a skills shortage. Public and private sectors are again coming together to develop opportunities for school leavers and graduate apprenticeships and for utilising skills from other disciplines within the construction industry. Raising the profile of building control as a profession is key to this.

Public sector funding continues to be an issue for the building control community particularly when considering the challenge of enforcement of building regulations and the identification of uncontrolled work. It is hoped that initiatives in 2015 will start to address this issue.

Overall building control continues to be a vibrant and interesting place to be, delivering a valued service and effective compliance in terms of safe, accessible and efficient buildings. Bring on 2015. ■

Paul Wilkins
Chief Executive at Butler and Young Group
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chairman@approvedinspectors.org.uk
www.approvedinspectors.org.uk

Supporting the retail sector

At Salus Approved Inspectors our portfolio of retail clients continues to expand to over 100 national retailers. With established national relationships with many of the UK's leading retailers including Asda, Brantano, Dunelm and Next we appreciate that retailers require far more than regulatory compliance and we are pleased to be able to tailor our services to the demands of our individual clients.

Early engagement is key to maximise the opportunities available from each individual site, our value engineered approach allows prime retail space to be maximised and ultimately provide the layouts that our client desire and then replicate these layouts as appropriate across the UK taking into account the individual constraints of each site.

Our experience expands across all aspects of the retail sector including out of town retail parks, Town and City Centre schemes and self-contained shopping complexes or malls together with specialist distribution centres, warehousing and food preparation schemes to ensure just in time delivery.

In additional to an all-inclusive Building Control service we also offer CDM coordination, fire engineering, fire risk assessments and the preparation of a detailed fire strategy to allow for the safe management of stores day to day and to inform any future alterations.

The preparation of a detailed fire strategy at design stage, updated throughout the build phase allows our clients to maximise their stores occupancy in a safe a controlled manner especially during the busy festive period or at sales time. Fully documenting the individual characteristics of each store and the buildings safety systems informs any future changes and sits alongside the buildings risk assessment to inform the ongoing day to day building management.

A dedicated project management approach is employed with all retail clients to provide a single point of contact and national consistency for all developments regardless of location. Site inspections are then facilitated from either our Head Office or any of our nine regional offices. With Approved Inspectors still not being able to operate within some of the more remote parts of the UK we are able to continue to support our clients in a consultant capacity to achieve their desired outcomes and consistency across their retail portfolio. Our approach inspires the confidence of the building landlords and regulatory bodies including fire authorities.

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

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

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Fire Engineering

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Using combustible cladding material on residential buildings

The Building Control Alliance has recently published new guidance in respect of using combustible insulation materials to residential buildings over 18m in height. Steve Evans at NHBC outlines what this means...

The Building Control Alliance has recently published new guidance in respect of using combustible insulation materials to residential buildings over 18m in height.

BCA technical guidance notes are for the benefit of its members and the construction industry, to provide information, promote good practice, and encourage consistency of interpretation for the benefit of our clients. They are advisory in nature, and in all cases the responsibility for determining compliance with the Building Regulations remains with the building control body concerned.

This guidance is based upon information available at the time of issue and may be subject to change. The Approved Documents should be consulted for full details in any particular case.

Section 12 of Approved Document B2 gives guidance on the acceptable use of combustible materials within the external cladding system.

Where a building exceeds 18m in height, AD B2 recommends (for the entire wall area both below and above 18m) either the use of materials of limited combustibility for all key components or to submit evidence that the complete proposed external cladding system has been assessed according to the acceptance criteria in BR135 – Fire Performance of External Thermal Insulation for Walls of Multistorey Buildings. This guidance note outlines both procedures in more detail and addresses common misconceptions relating to combustibility and surface spreads of flame ratings.

Key Issues

Fire spread via the external wall medium is exacerbated by the use of combustible materials and extensive cavities. The speed by which a flame rises vertically up the external face of a building leads to potentially rapid fire spread from lower floors to higher ones. Within the confines of a cavity, the flame will also elongate up to ten times its length as it searches for oxygen. Hence, the need for robust cavity barriers, restricted combustibility of key components, and the use of materials with a low spread of flame rating proving necessary, particularly given the delamination and spalling nature of some of the components when heated.

Statutory guidance addresses these issues for the initial stages of a fire, after which time it is assumed that the fire brigade have arrived to deal with the incident. However, even with the fire brigade's arrival, a fire which cannot be reached within 18m of the street level is unlikely to be adequately tackled using current fire brigade apparatus and so additional safeguards are necessary for taller buildings.

A Surface Spread of Flame Classification does not infer any resistance to combustibility, it is solely a measure of the spread of a flame across the surface:

- Thermosetting insulants (rigid polyurethane foam boards) do not meet the limited combustibility requirements of AD B2 Table A7 and so should not be accepted as meeting AD B2 paragraph 12.7. However, if they are included as part of a cladding system being tested to BR135 & BS8414, the complete assembly may ultimately prove to be acceptable

Steve Evans, Senior Area Technical Manager, NHBC

- The BR135 / BS8414 tests deal solely with the spread of fire once it has entered the cavity. Hence, the requirements for cavity barriers in accordance with Section 9 of AD B2 are required in all cases including around openings in the façade.

Guidance

Where the building doesn't exceed 18m in height, there is no restriction on the combustibility of the components of the cladding system. However, cavity barriers in accordance with Section 9 and Diagram 30 will still be needed

Where the building exceeds 18m in height, the BCA recommends three options for showing compliance with paragraph 12.7 of AD B2:

Option 1

The use of materials of limited combustibility for all elements of the cladding system both above and below 18m. This includes the insulation, internal lining board and the external facing material. Smaller gasket parts and similar low-risk items can be excluded from this requirement. The definition of a MOLC is stated in Table A7 of AD B2.

Option 2

An acceptable alternative approach (see AD B2 paragraph 12.5) is for the client to submit evidence to the Building Control Body that the complete proposed external cladding system has been assessed according to the acceptance criteria in BR135 – Fire Performance of External Thermal Insulation for Walls of Multistorey Buildings. The preferred method of demonstrating compliance is via a fire test carried out in accordance with BS8414:1 Fire performance of external cladding systems – Part 1: Test method for non-loadbearing external cladding systems applied to the face of the building or BS8414-2 Fire performance of external cladding systems – Part 2: Test method for non-loadbearing external cladding systems fixed to and supported by a structural steel frame. The test should be carried out by an independent UKAS accredited testing body. The BS8414 tests do not give a PASS /FAIL answer because the data obtained is used by different bodies with different minimum requirements. Hence, for Building Regulation purposes, any test using this method needs to be supported by proof that the acceptance criteria of BR135 have been met. These acceptance criteria are listed in Annex A or Annex B of BR135 and include the following:

- External fire spread – determined by a 600ºC rise in temperature on the external face of the building (measured at a point approximately one storey above the fire floor) for thirty seconds or more during the initial fifteen minutes of the test.

- Internal fire spread – determined by a 600ºC rise in temperature on the internal face of the building (measured at a point approximately one storey above the fire floor) for thirty seconds or more during the initial fifteen minutes of the test.

- Mechanical performance – determined by an assessment of system collapse, spalling, delamination, flaming debris or pool fires.

Option 3

If no actual fire test data exists for a particular system, the client may instead submit a desktop study report from a suitable independent UKAS accredited testing body (BRE, Chiltern Fire or

Continued on page 130...


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Continued from page 128...

Warrington Fire) stating whether, in their opinion, BR135 criteria would be met with the proposed system. The report should be supported by test data which the test-house already has in its possession, and so this option may not be of benefit if the products have not already been tested in multiple situations/ arrangements. The report should also specifically reference the tests which they have carried out on the product.

Things to note:

- Surface Spread of Flame Classification does not infer any resistance to combustibility, it is solely a measure of the spread of a flame across the surface.

- Thermosetting insulants (rigid polyurethane foam boards) do not meet the limited combustibility requirements of AD B2 Table A7 and so should not be accepted as meeting AD B2 paragraph 12.7. However, if they are included as part of a cladding system being tested to BR135 & BS8414, the complete assembly may ultimately prove to be acceptable.

- The BR135 / BS8414 tests deal solely with the spread of fire once it has entered the cavity. Hence, the requirements for cavity barriers in accordance with Section 9 of AD B2 are required in all cases including around openings in the façade.

- Issues of the fire-resistance performance of external cladding systems, eg in relation to boundary conditions and space separation still need to be addressed. The recommendations in Section 13 of Approved Document B2 and BRE guide BR 187 – External fire spread: building separation and boundary distances should be followed. ■

A pdf version of this guidance can be downloaded from the BCA website – www.buildingcontrolalliance.org/guidance/technical-guidance-notes/

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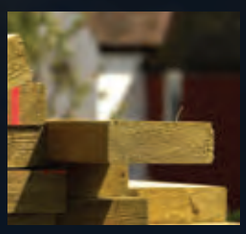

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Looking forward – Westminster and fire?

Graham Ellicot, CEO of the Fire Industry Association (FIA) looks at the current government departments that have a concern over fire policy, and what impact the next general election may have...

It's an interesting time in politics at the moment with the rise of UKIP and the likelihood that the SNP could decimate the Labour vote in Scotland at the next General Election. Indeed the bookies are offering 20/1 on a Labour/SNP coalition. And, as Alex Salmond has not ruled out running for a seat at Westminster if Labour and the SNP combine to form the next government, we could have the interesting situation of him sitting across the aisle from the Tory Leader.

But rather than continuing to play the what if game with the next government a better question to ask might be which government department will have the most impact on the future of fire? The answer should be simple as the Department for Communities and Local Government (DCLG) has the remit for the English Fire & Rescue Services with the other devolved administrations looking after their own Fire & Rescue Services.

However, in addition to DCLG, the Home Office via the Home Secretary is also seemingly beginning to offer a view on the future of the Fire & Rescue Service. In particular, Theresa May commented in September that the need for further spending cuts will necessitate the future integration of the police, fire and ambulance emergency services.

And it's not just the Home Office that has a view on fire; the Cabinet Office has also had its input here via its Mutual's Initiative. Indeed the Cabinet Office has 'put its money where its mouth is' by providing Cleveland Fire Brigade with £95,000 backing from the £10m Mutual Support Programme so that it can get "specialist business expertise to move the plan for Britain's first 'John Lewis style' Fire Brigade a step closer to reality."

Moving right along there's yet another government department that has a say in fire and that's the Department for Business Innovation and Skills who are responsible for Primary Authority Schemes, which now include fire. These schemes were designed to create business investment in growth by developing confidence that regulators in different local authority areas would not place competing demands on a business which in turn could impose extra financial burdens on it.

The question I keep asking myself is do all these different departments need to be involved? Do they talk to each other like a joined-up government?

The next election is looming and once the result is known there could be even more changes. My bet is even more departments will become involved and I'm polishing up my John Lewis Card just in case the commercial sector takes over – free coffee every time I cycle to a Waitrose could become call by your fire station for a doughnut. And my local fire station is next to a betting shop...now where did I put that betting slip? ■

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Is fire all down to a simple triangle?

Association for Specialist Fire Protection CEO Wilf Butcher argues that there are many elements to consider when attempting to prevent and control fire within the built environment...

The triangle of fire is a well-recognised and understood model for determining the constituent parts necessary to create and sustain a fire. If any one of the three key elements is missing i.e. oxygen, heat or fuel, then a fire simply cannot take hold. If any of the three elements is removed during an established fire, for instance by cutting off the air supply, the fire will go out.

To a greater or lesser degree all buildings will contain sufficient quantities of all three of the above ingredients to enable a fire, with its associated hot smoke and gases to occur.

The extent to which any such fire will develop and spread will be governed by a second triangle, which I call the 'triangle of construction'. This triangle is also made up of three essential elements, those of design, construction and maintenance.

Provided that those responsible for each one of these essential elements ensures that the fire provision within their remit of responsibility is undertaken in an appropriate manner, then it is reasonable to assume that the development and spread of a fire will be held to a minimum.

However, if for any reason one of these processes should prove inadequate, it is probable that the growth and spread of fire and its associated components will be significant, irrespective of whether the other elements of the triangle are seen to be 'fit for purpose'.

Such a 'triangle of construction' is of course the polar opposite of the 'triangle of fire', in that; failure within any one element will actually lead to a fire spreading rather than result in it being extinguished.

Photo courtesy of ASFP member BM TRADA

Periodic inspections should be carried out as part of a general maintenance plan

Each group defined within this 'triangle of construction' has a duty to ensure that, in the unfortunate event of a fire, they have taken the necessary steps to ensure that their responsibilities in relation to fire safety have been fully met.

What does this mean in practice?

Building Design – the first side of the triangle
Regulations lay down a basic set of parameters in relation to life safety in the event of a fire and are not intended to offer protection to the building. Yet, even these basic mandated levels of protection are often seen as a challenge to value engineer down to a minimum or, in some cases, engineer out altogether!

The design process can also lead to weaknesses in the completed construction. A tendency toward design and build means that the design of fire compartments, for example, and the services passing through them are often inadequate. As a result, divisions are poorly thought out and the firestopping contractor often has to sort out an inherited mess, with common issues including mixed services passing through the same wall; fire dampers which are not in the plane of the wall/floor; and the use of inappropriate products and materials. Proper design of divisions and planning/sequencing of the work is critical to ensure the compartmentation is adequately provided. The Association for Specialist Fire Protection (ASFP) has recently published its Technical Guidance Document 17: Code of practice for the installation and inspection of firestopping, which stresses the importance of adequate design and planning and can be downloaded from http://is.gd/FCjaV1 .

When it comes to appropriate building design, granted, the award winning façade is important and its green credentials essential, but not by trading off investment in vital fire safety provision.

No matter how well a building is constructed and maintained, fundamental weaknesses in a building's fire safety design will always place the building and its occupants at risk in the unfortunate event of a fire.

Building Construction – the second side of the triangle
Within the UK and many other parts of the world there is no mandatory requirement calling for fire protection measures to be installed or undertaken by a competent person or via a third party certificated process.

Lack of appropriate knowledge both by those that procure fire protection installation services and those that claim to offer such services without a

recognised standard of competency, can and does lead to inappropriate installations. If not detected, these will result in a building that is not fit for purpose in terms of smoke and fire performance.

If you are involved in the provision of fire protection, at any level, then you share liability for its usefulness and its operation when it is needed in fire, and that liability will still be there in the event of a court case.

If it is your responsibility to specify materials and/or appoint the installation contractor, it is also your responsibility to ensure that they can prove competency for the fire protection materials used, or the works to be carried out.

If you are a manufacturer of fire protection products, it is your responsibility to show that they are fit for purpose and will provide the required fire performance, usually through a rigorous programme of fire testing and third party certification.

Likewise, if you are an installer of fire protection systems it is of equal importance that you can demonstrate your level of competence.

From an ASFP perspective, a competent person is one who can demonstrate through a third party certification or UKAS-accredited competent person scheme that they have the expertise, skills and commitment for the professional installation of passive fire protection products.

All ASFP contracting members must have attained appropriate third party certification status before they can become a member of the Association, so make sure you look for the ASFP logo.

No matter how robust fire safety measures may be within any building design, incorrect installation may well render such provision ineffective.

Construction and maintenance – the third side of the triangle

Over the lifespan of any building, many changes are likely to be made, not only to the existing fabric of the building but through its potential change of use, essential maintenance and updating or expansion. It follows therefore that on-going and regular assessments of the fire safety measures within a building are undertaken to ensure that appropriate fire safety provision is maintained.

Risk assessment for passive 'built-in' fire protection is often not a straight-forward exercise. Often such measures may be hidden above a suspended ceiling or within a cavity and, in some cases, may even be sited inside other components not obviously recognised as fire protection – for example, a fire damper within an air ventilation ducting system.

Many follow-on trades may unwittingly destroy essential fire compartmentation provision, since, to the untrained eye, a hole in the wall may just be seen as a maintenance issue.

In most cases, correctly applied or installed passive fire protection products or systems used internally in buildings should not require significant maintenance over the design life of the building, other than where mechanical damage or subsequent modification has occurred. However, periodic inspections should be carried out as part of the normal maintenance plan and any damaged passive fire protection measures either replaced, or where appropriate, repaired in the same way as in the original manufacturers' specification.

Where it is not possible to replace or repair with the same manufacturer's products, a professional opinion should be sought before mixing and matching materials and products from different manufacturers.

Some features, such as fire-resisting ducts and fire doors, will require regular operational checks. Fire dampers, for example, should be inspected and operated at least annually and fire resisting ducts should be checked for the build-up of grease/rubbish.

Keeping detailed and accurate records is vital and should be seen as an essential management requirement.

Irrespective of how appropriate the original building design may have proved or how well it may have been constructed, failure to continue to maintain the building's fire protection measures, be they active or passive, could lead to premature or total failure of the building's intended fire performance. This may in turn lead to rapid spread of smoke, toxic gases and fire.

Given the arguments expressed above, it is clear that there are many essential elements to consider when considering fire safety within the built environment. Controlling the elements in the triangle of fire will prevent a fire from starting or help to extinguish it; while controlling the elements within the triangle of construction will prevent the spread of fire and smoke.

For further guidance regarding training, regional CPD seminars or to access a wealth of advice, technical guidance, videos and other publications; all free to download, go to www.asfp.org.uk ■

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The value of 3rd party certification for fire protection services

Third Party certification bodies are an important and vital part of the fire industry. They ensure that companies with certification are fully trained and competent in carrying out work such as maintaining and testing fire extinguishers, providing fire alarm systems and carrying out detailed fire risk assessments. Company Managers or Facilities Management companies who provide these services to their clients have a vital responsibility to ensure that these services, or those of their sub contractors, meet national standards and achieve their legislative duties.

Thousands of companies are now registered to various schemes and as DCLG (Department for Communities and Local Government) say in their Guidance notes: "Third-party certification schemes for fire protection products and related services are an effective means of providing the fullest possible assurances, offering a level of quality, reliability and safety that non-certificated products may lack. This does not mean goods and services that are not third-party approved are less reliable, but there is no obvious way in which this can be demonstrated."

Due to fairly recent changes in the law with regard to Fire Risk Assessment it is necessary to ensure that the person undertaking the fire risk assessment is competent and have provided the much needed assurance for end users with regard to the quality of their Fire Risk assessments to meet their obligations under the Regulatory Reform (Fire) Order 2005, the Fire (Scotland) Act 2005 and the Fire and Rescue Services (Northern Ireland) Order 2006.

There are no national standards for the competence of a fire risk assessor, although there are a number of organisations that have their own schemes setting out standards of competence, such as the Institute of Fire Engineers and the UKAS accredited Warrington Certification FRACS scheme for individual assessors. A competency Council was established following the serious fires at Lakenal House and Rosepark Care Home, to provide guidance on the competence requirements and they have published their recommendations and a guide for specifiers.

There is also the UKAS accredited scheme from BAFE (SP205) which offers third party certification of organisations that provide fire risk assessments, ensuring both the competence of the assessors and the capability of the organisation to support them. There are three certification bodies licensed to deliver this scheme and IFC offer a similar scheme in their own right.

In summary, there can be no room for complacency by building managers over the quality of their fire protection. Starting with the fire risk assessment and working through the passive elements of the building structure, the alarms, extinguishers, signage and emergency lighting, there must be compliance with legislation and Building Regulations. The enforcing bodies, generally the fire and rescue service, are actively pursuing companies and individuals that have not taken all reasonable precautions and the number of prosecutions is growing. To ensure that you have the best possible fire protection in place, both now and in the future, the use of third party certificated providers is an essential factor.

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BAFE - Helping business to meet their fire protection obligations

Don't gamble with your fire risk assessment!

It is a legal requirement across the UK that all premises have a full and competent Fire Risk Assessment and then implement the fire protection requirements. The 'responsible person' has the duty to ensure that they have carried out these obligations – but how can they be sure that they have used competent contractors?

BAFE has developed a scheme for Companies who carry out Fire Risk Assessments (SP205) which is a vital part of meeting legal responsibility obligations under fire legislation. Providers are rapidly recognising the value of this scheme and gaining certification. After a number of fatal fires, such as the one at Rosepark Care home in Scotland and Lakenal House in London, there have been updated requirements for fire risk assessments.

BAFE is the independent, third party certification, registration body for the fire protection industry, founded nearly 30 years ago with a wide range of industry bodies represented on our Council.

We develop schemes for UKAS accredited certification bodies to assess and approve companies to recognised standards. There are now more than 1150 BAFE registered companies across the UK. Our aim is to support property owners and specifiers to ensure that they get quality fire protection for their premises, staff and service users.

If you are specifying the supply and maintenance of portable extinguishers, look for Companies accredited to BAFE Schemes SP101/ST104. Companies are certificated to ISO9001 and all technicians are assessed by BAFE.

For installing or maintaining fire alarm systems Companies should hold BAFE modular SP203-1 scheme approval. Our Emergency Lighting scheme (SP203-4) sets out the standards and staff competence criteria to be met.

There are a range of other schemes for different fire protection requirements.

So if you want to be sure you are getting your fire protection from companies who are properly assessed look for more information at:

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Counting the escalating cost of defective design

Good design is important regardless of the property, the product or the people using it. The additional factor when designing to accommodate access for disabled people is that you may face the costs of fixing any errors – and any discrimination claims which may result.

That can leave you facing a triple whammy of paying for improved design, loss of business and customer compensation, and it underlines the importance of getting the design right at the outset.

A new construction project or major renovation can involve an army of experts all working towards the same aim, but not necessarily aware of the fine detail which can make or break the best-laid plans.

You might have a lead architect, someone looking after construction design and management, a fire engineer, a mechanical and electrical expert, a landscape architect. They are all specialists in their respective disciplines but they may not necessarily anticipate the accessibility impact of their individual contributions on the wider project.

The general principle of a ten-fold increase in the cost of an error for each stage of the process is particularly applicable to building design.

For every £1 you might spend remedying a problem at the concept and preparation phase, you can expect to spend £10 if the problem is not resolved by the time you get to scoping a project, and £100 at the planning and pre-construction stage.

Add another zero if the problem lingers to the point of application and construction, and be prepared for that initial £1 to climb to £10,000 if the failure to act early leaves you making alterations once the property is occupied and in use.

By appointing an access consultant to the team you can ensure you get things right first time, avoiding the delays and cost to a project that result from having to revise the work of one specialist and then make sure it fits with the plans of all the others.

At About Access, we conduct appraisals to ensure that inclusive design is achieved throughout the construction process.

We study accessibility provision from the earliest stage, looking at the plans and giving our advice at a point where corrections and improvements can be easily accommodated.

We use our experience and understanding to make recommendations that will assist a design team in incorporating features to improve access, and we also help them save time and money by avoiding costly corrections once construction is under way – or even complete!

In terms of incentives for good practice there is more to this than staying within the law and avoiding the discrimination against disabled people which could leave your business vulnerable to a claim.

Think also about the cost of the business lost when a disabled person and the other members of their party decide to shop, eat or stay elsewhere because your facilities don't extend the welcome and level of care which they are used to.

The Department for Work and Pensions refers to the "purple pound" to indicate the spending power of a disabled person and

the other people in their household. Citing the Family Resources Survey of 2012-13, it calculates that the 12.2 million households in the UK which include a disabled person have a combined income – after housing costs – of £212 billion.

We can help your business take an inclusive approach to what is potentially a huge market. Our Managing Director Ian Streets is a member of the National Register of Access Consultants, the Access Association and Network Rail's Built Environment Access Panel (BEAP). He has also worked with BSI Standards, the UK's national standards body, to advise on appropriate designs for buildings and their surrounding areas.

If you want to know more, or you have a specific question or concern, please contact us at info@aboutaccess.co.uk

About Access
...for an inclusive world

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Building a more accessible future

The retail and hospitality industry have been challenged to increase the levels of accessibility for disabled people. Chris Moriarty, Head of Insights and Corporate Affairs at BIFM examines the challenge ahead...

The beginning of December saw a report published by a government backed audit of over 30,000 businesses, which aimed to assess the levels of disabled access in high street shops and restaurants. The findings gathered from this report proved to be quite unexpected and significantly disappointing for the retail and hospitality sector.

The results identified emphasised how a large percentage of businesses within this sector were underperforming in their approach to facilitate their disabled customers. As a result of this, the Minister for Disabled people, Mark Harper, turned his focus onto the Catering and Hospitality industry, looking at what measures could be put in place to better cater for disabled people.

Reviewing some of the figures obtained from the report, it was evident that there would be strong concern. Two in five food outlets had no accessible toilet, whilst two thirds of staff had received no appropriate training to cater for disabled customers.

Disabled consumers are expected to spend around 200bn over the Christmas period, it would therefore seem essential for businesses to invest a lot more time and money into their care.

There are two ways to frame this. The first is to look at how we design our new buildings, taking into consideration accessibility from day zero. We have recently seen a shining example of this approach two years ago at London 2012. The Games were considered the most inclusive and accessible ever. The success of the Games has led to the Built Environment Professional Education Project (BEPE), an initiative announced by Government and the Mayor of London aimed at improving accessibility by taking the learnings from 2012 and building it into professional education. BIFM has taken the lead, having

Chris Moriarty
Head of Insights and Corporate Affairs

launched our revised standards which include accessibility and inclusion, we aim to deliver these through our qualifications early in the New Year.

However, it's even more crucial that we get this knowledge and competence to those operating existing buildings that may not have been built with accessibility in mind. These buildings will need to be adapted and reshaped. Whether the building is being designed from scratch or is being retro-fitted to make this happen, it is crucial that facilities managers are involved in the process as they will bring the experience of operating buildings which will be vital to getting this right.

That said, making buildings accessible is one thing but often the inclusivity part is not considered enough. Whilst there may be an accessible toilet in the building, is it tucked away somewhere inconvenient? I have heard stories of people entering buildings that have to visit other floors, but need a lift to do so, being asked to use the goods lift or trade entrances. The impact of this demeaning process goes well beyond ticking a compliance box. A good example was a building described to me where there was a lavish spiral stairway going up through the centre of the building. It was stunning. Should someone not be able to use the stairs then they could miss out on this excellent design feature, so they built a glass elevator through the centre of the spiral meaning that people using the lift can still enjoy the experience. Those with disabilities know that they aren't able to do everything other people can, but we should actively be trying to match their experience with others, to the best of our ability.

As with many things this is not a straight forward challenge. Whilst there is a critical eye being cast on the retail and hospitality sector, there are stories of retailers submitting applications to amend their building only to see it being knocked-back by the planners. So there are a number of people, and professions, that need to take a collective, collaborative approach.

Also, there is no short-cut to making this happen. The responsibility lies not just within the retail sector, but UK business more broadly, and we only have a chance of successfully achieving a truly inclusive approach if we get the firm commitment that is currently lacking from businesses of all sizes. Those businesses who fail to act run the risk of missing an important trick and alienating an important market.

Disabled customers should be able to obtain goods and receive services in the same way as other customers who are not disabled. The UK should be leading the way, setting a positive example and sending an important message to the rest of the world. Small changes can lead to big improvements, not just for customer experience, but for the bottom line of UK business and, essentially, the wider economy. ■

BIFM
ADVANCING OUR PROFESSION

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Confidence in managing asbestos

Managing asbestos is a key health and safety concern, but we can have confidence in trained and certified professionals to deal with this hazardous substance say UKAS, the UK's national accreditation body...

Many years ago, asbestos was considered to be the latest wonder material for its high resistance to heat and other chemicals. Consequently it was added to thousands of different products, ranging from wall panels and tiles to lagging and painting materials. It was only several years later that its adverse effects were first identified. Whilst asbestos may sound like a 20th Century problem, it took until 1999 to finally ban it from being used in building materials. This means that any building constructed prior to that ban could contain asbestos somewhere in it. Despite being a hazardous substance, the presence of asbestos in a building isn't necessarily a problem, provided the asbestos is identified, monitored, maintained and safely removed where necessary.

With the Health & Safety Executive estimating around 4,000 annual deaths from asbestos-related diseases, it is vital that issues such as this are managed properly, particularly in non-domestic properties. Regulation 4 of the Control of Asbestos Regulations 2012 (CAR 2012) sets a legal requirement for owners and occupiers of non-domestic buildings to carry out a suitable assessment to determine whether asbestos is present or liable to be present. Furthermore, common areas of residential rented properties, such as halls, stairwells, and roof areas, are classified as non-domestic. A necessary part of the assessment process involves having a survey carried out, and the materials tested and analysed.

Contaminated land is also an issue especially in urban planning where a brownfield site is being considered for potential development. Previously it may have been used for industrial or commercial purposes, and been contaminated by hazardous waste or pollution, including asbestos.

The Environmental Protection Act 1990 introduced Part 2A to deal with a substantial legacy of contaminated land in England, either from historical contamination and on-going land use, with the remit that unacceptable risk be removed. Indeed the Planning in England, National Planning Policy Framework (2012) oversees development of any land to ensure it is suitable for new use. The Environment Agency (EA) is the statutory consultee with the remit

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that it assesses sites for historical contamination and new land use. If asbestos is known or possible on site, it will be considered as a major contaminant of concern and in this instance the Control of Asbestos Regulations 2012 will apply.

There are many companies that provide consultancy and surveying services, sometimes at what can seem to be a low cost. However, there can be no guarantee that these organisations are competent to deliver what they say they can. So how can a duty holder be confident that the service will meet their requirements? The answer is to seek out companies accredited by the United Kingdom Accreditation Service (UKAS).

As the UK's national accreditation body, UKAS' role is to assess whether organisations providing certification, testing, inspection and calibration services are meeting a required standard of performance. By effectively checking the checkers against international standards, the process of accreditation provides an independent and authoritative declaration that the organisation providing the service has the people, facilities, technical expertise, management systems and track record to undertake the activity professionally and competently.

Certification is often seen as one way of differentiating between service providers. However, even the widely recognised BHOS P402 certificate for asbestos surveying is not of itself a demonstration of competence. The HSE has long recognised the benefits of UKAS accreditation in providing confidence in the competence and capabilities of laboratories and inspection. Consequently the HSE strongly recommends the use of an accredited surveyor and UKAS currently accredits over 24 asbestos inspection bodies to carry out surveys. It is also mandatory for asbestos testing laboratories to be UKAS accredited to ISO 17025, with some 39 laboratories having reached that standard.

The most important benefit of using accredited suppliers is that it delivers confidence to procurers and end users. Glen Taylor is Head of Scientific Service at Hampshire Country Council and is specifically responsible for managing asbestos in the council's portfolio of buildings. He comments that; "As a purchaser, it is essential that we get what we ask for, so UKAS accreditation is a pre-requisite whenever we are choosing an organisation to work with to help us manage asbestos. We do not look for UKAS accreditation in one area of asbestos management. We would look for it in all areas that can be accredited. The reasons for using a UKAS-accredited company are manifold. Firstly, it is a way of ensuring the quality of the work. Secondly, we are dealing with the management of asbestos in schools and offices, and so there are clearly reputational issues at stake as well. Using a UKAS accredited organisation is not going to necessarily increase the price of procuring a particular service. A UKAS accredited organisation will offer value for money. The cost of getting it wrong and re-working is phenomenally expensive. This would not be the best use of rate payers' money. It is much cheaper to get it right first time."

The assessment involved in gaining accredited status is not only robust, it is also a continuous process, involving surveillance visits over a four year cycle in order to ensure that best practice is followed continuously, and there is no risk of everything being 'scrubbed up' for a single assessment visit. Moreover, it is not a rubber stamping exercise as UKAS has the power to suspend or permanently withdraw accredited status. UKAS accreditation is the best way to be certain that the service is fit for purpose, technically competent, completely impartial and accountable. Not only does this demonstrate due diligence and best practice on the part of the duty holder, it also means peace of mind for everyone. Where something as important as asbestos management is concerned, it makes sense to use accredited suppliers. ■

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Addressing fuel poverty in the UK

John Perry, Policy Adviser at the Chartered Institute of Housing (CIH) discusses how housing has a huge role to play in reducing fuel poverty statistics...

In 2014 there were estimated to be 2.3 million households living in fuel poverty in the UK[1] – and more than 3 million families[2] likely to cut back on food that winter to pay their fuel bills.

Housing has a huge role to play in improving those statistics. By far the biggest impact can be achieved by improving the efficiency of the housing stock itself – but to secure the full benefits of energy-efficient homes it is important to work with tenants on energy use, and not just work on properties.

The scale of the challenge is huge. The government's target is to cut UK carbon emissions by 80% by 2050. Insulating our housing stock to a high standard has to be a major part of this, because housing contributes more than a quarter of Britain's total emissions. The government's Carbon Plan aims to achieve 'near zero' carbon emissions from housing by 2050. To achieve these targets, we have to insulate one more house to very high standards every minute across the UK. That's 625,000 per year.

Right now the sector isn't achieving anything like the right pace or standards of change. For example, the Committee on Climate Change expected 130,000 solid wall homes to be insulated in 2013; fewer than 25,000 were actually done. The case for a national retrofit programme that would achieve government targets is set out by the UK Green Building Council in its report A Housing Stock Fit for the Future [3].

Of course all social landlords need to ensure their stock meets the Decent Homes Standard – but this is far below the levels of energy efficiency needed to achieve the 80% by 2050 target. While for new homes there is the planned 'zero carbon' standard and currently the Code for Sustainable Homes, there is no equivalent for the existing stock. The National Federation of ALMOs (arms-length management organisations) has called for an ambitious energy-efficiency target [4] to form part of the Decent Homes Standard for delivery by 2020.

The policy environment presents significant challenges. Policy has shifted away from direct investment in greening the housing stock towards incentivising households through the Green Deal. We are facing a long-term problem which needs proper investment as well as a long-term plan. So much reliance has been placed on the Green Deal as the centrepiece of government environmental policy that the extremely low take-up now presents a major obstacle. But could this be turned into an opportunity? The Green Building Council has called for a revived and revamped Green Deal [5] that could be much more attractive to householders if it offered lower-cost finance.

We also need to revamp the Energy Company Obligation (ECO) so that it reaches many more homes and concentrates both on the fuel-poor and on hard-to-treat properties (like its predecessors such as the Community Energy Saving Programme). Leicester City Council used CESP to comprehensively insulate a low-income estate of over 1,000 houses, including right to buy properties. Such schemes make a huge difference to residents because they deliver high standards and hence real savings in fuel bills, not the marginal effects that often come from (say) only doing roof insulation, which is where ECO now focuses. We badly need to tackle hard-to-treat homes such as those with solid walls. Over 7 million households live in such homes, including half of those affected by fuel poverty.

John Perry
Policy Adviser
Chartered Institute of Housing (CIH)

As Affinity Sutton's Jeremy Kape has argued, the valuable role that social landlords can play in improving the take-up and technical standards achieved by both ECO and Green Deal needs to be recognised by putting them at the forefront of schemes. Many now have the technical skill and customer-facing experience to deliver programmes that work and are cost-effective. They should be seen as a frontline resource. Social landlords have also shown how they can contribute towards the shift to renewable power sources, particularly through investments in solar PV.

While new build is less important environmentally than dealing with the existing stock, it's vital that we stop building homes that aren't fit for purpose because they burn too much energy. We should move to zero carbon new homes across the industry as soon as possible, especially as the typical extra cost of building a semi-detached house to the zero carbon standard is now down to less than £5,000 [6].

Finally, housing providers have a big role in making the case for change. This extends from the most basic level of their day-to-day interactions with tenants about fuel bills and how they heat their homes, to the installation of new kit like SMART meters that help people understand their energy use, to broader work with residents' groups and acting as a powerful lobby for action.

Rates of home insulation and of investment in renewables are heading downwards instead of accelerating as they need to. We can get back on track, but we don't have any time to lose. And as we make efforts to do so, the housing industry has a huge role to play.

About CIH:
The Chartered Institute of Housing (CIH) is the independent voice for housing and the home of professional standards. Our goal is simple – to provide housing professionals with the advice, support and knowledge they need to be brilliant. CIH is a registered charity and not-for-profit organisation. This means that the money we make is put back into the organisation and funds the activities we carry out to support the housing sector. We have a diverse and growing membership of more than 22,000 people who work in both the public and private sectors, in 20 countries on 5 continents across the world. Further information is available at: www.cih.org ■

[1] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/319280/Fuel_Poverty_Report_Final.pdf
[2] http://www.childrenssociety.org.uk/news-and-blogs/press-release/over-half-poor-uk-children-denied-key-support-keep-their-homes-warm
[3] http://www.ukgbc.org/resources/publication/housing-stock-fit-future-making-home-energy-efficiency-national-infrastructure
[4] http://www.almos.org.uk/document?id=6238
[5] http://www.ukgbc.org/press-centre/press-releases/energy-efficiency-must-be-national-infrastructure-priority-urges-uk-gbc
[6] http://www.housingexcellence.co.uk/green-stories/sweett-group-analysis-reveals-its-getting-cheaper-build-zero-carbon-homes

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Action for warm homes

Jenny Saunders, Chief Executive of National Energy Action discusses the importance of energy efficiency to reduce fuel poverty...

With winter here it is likely that fuel poverty, or more generally the issue of energy unaffordability and its impact on the health and wellbeing of the poor and elderly, will once again feature heavily in the news headlines. Around 2.5 million households in England (around 10%) are still classed as living in fuel poverty, and unable to afford to heat their homes, despite years of campaigning by National Energy Action and a government commitment 14 years ago to eradicate the problem by 2016.

Fuel poverty is caused by 3 factors – poor quality energy inefficient housing, low incomes, and high energy prices. Of these 3, the popular narrative tends to focus almost exclusively on energy prices, however improving the energy efficiency of our housing stock is by far the most effective way to tackle the problem in a long term and sustainable way. Government surveys show that 35% of households living in the least energy efficient properties live in fuel poverty compared to only 2% in the most efficient; that 65% of fuel poor households live in properties with Energy Performance Ratings of E, F, or G (on a scale of A-G), lacking adequate insulation and efficient heating systems.

There is also a strong correlation between fuel poverty and general poverty, and capping energy prices and mandating rebates on fuel bills for those in the lowest 3 income deciles can bring some relief, but improving the energy efficiency of their homes could save them hundreds of pounds every year, making them more resilient to anticipated future price rises.

For over 30 years NEA has promoted the benefits of energy efficiency, increasing understanding amongst policy makers and building capacity in communities and companies. In 2013 we assisted 27,000 low-income households – working through our Warm Zone subsidiary company and with project partners we provided insulation, heating, energy advice and

Jenny Saunders, Chief Executive, National Energy Action

income maximisation services. We supported 10,000 stakeholders to improve advice and services for their clients, and trained 2852 front-line advisors working with vulnerable people. Our experience, and the evidence that we have gathered through research and evaluation, has demonstrated that whilst improving energy efficiency is the most effective way to tackle fuel poverty, it also offers much wider benefits to society – releasing additional money into the local economy that would have been wasted on energy; enhancing streetscapes, and reducing the burden on over-burdened health services.

At a political level this has been recognised, however resources to tackle domestic energy efficiency have been inadequate. Whilst 2 million low-income households benefited from heating and insulation measures funded directly from the Treasury via the Warm Front scheme, the government's approach to funding these measures since 2011 has been via obligations placed on energy supply companies (ECO). This market mechanism has not been entirely successful in reaching the most vulnerable and a mid term policy review caused a hiatus in delivery and disruption in the supply chain.

We are now at something of a crossroads. The government has recently reasserted its commitment to tackling fuel poverty, this time with a new statutory target for England to ensure that as many fuel poor homes 'as is reasonable practicable' achieve a minimum energy efficiency standard of band C by 2030, with interim targets of Band E by 2020 and Band D by 2025. This is supported by a new fuel poverty strategy for England which is currently under consultation, presenting the most significant opportunity in a decade to influence the future direction of fuel poverty policy in England. However, whilst NEA agrees with the overall aspiration, to reach it will require enhanced and coordinated action and additional resources. Central to the success of the strategy will be the provision of a sustainable, long-term, Treasury-funded energy efficiency infrastructure programme that is better targeted to meet the needs of fuel poor households and will ensure that help is directed to those who need it the most via locally led partnerships. We are urging the government to act on NEA recommendations which will ensure that by 2025 95% of households currently affected by fuel poverty will have affordable warmth and that future generations will not have to endure the misery of living in cold, damp homes.

National Energy Action (NEA) is a national charity which campaigns for greater investment in energy efficiency to help those who are poor and vulnerable, and deliver advice and services to eradicate fuel poverty. ■

NEA
Action for Warm Homes

Jenny Saunders
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A solution to combat fuel poverty

The NIA is calling on all political parties to recognise that home energy efficiency needs to be defined as a National Infrastructure Priority to combat fuel poverty...

The National Insulation Association (NIA) is advising that energy efficiency interventions provide the best long term solution to reduce energy bills and tackle fuel poverty. They are also the most cost effective way to reduce carbon emissions.

Neil Marshall, Chief Executive at the National Insulation Association said: "Following the significant reduction in insulation activity under the Energy Company Obligation and the closure of the SWI funding in the 2nd phase of the Green Deal Home improvement Fund, the government has to rethink its stop start schemes and incentives. It really needs to put in place a long term plan and funding mechanism if we are to insulate the UK housing stock in a timely manner. With over 7 million homes having inadequate loft insulation, over 5 million that require cavity call insulation and almost 8 million homes that need solid wall insulation, we need to significantly strengthen energy efficiency policies and programmes."

Make Energy Efficiency retrofit an Infrastructure Priority

The Energy Bill Revolution Campaign which the NIA supports is calling for 2 million low income homes to be brought up to EPC Band C by 2020, and 6 million low income UK homes up to EPC Band C by 2025.

To achieve these targets energy efficiency needs to be made a UK infrastructure investment priority on a par with energy generation and transport etc. To meet the 2020 target requires increasing annual investment to £2bn per year. This could be achieved by supplementing the ECO with either half of the £2bn annual proceeds of carbon revenue from the Carbon Emissions Trading Scheme and Carbon Floor Price projected for 2015 to 2020, or by using a small percentage of the UK infrastructure budget. An extra £1bn of government investment each year only represents 2% of the annual £45bn government infrastructure budget. Investment in retrofitting homes to make them energy efficient not only provides the best way to cut energy bills, reduce carbon emissions and tackle fuel poverty, it also represents one of the best economic investments the government can make in terms of growth, jobs created, value for money and tax revenue. The government's infrastructure programme and budget should be prioritised accordingly.

Marshall added: "The NIA is calling on all political parties to recognise that home energy efficiency needs to be defined as a National Infrastructure Priority with public investment to support the most vulnerable households and to create the confidence for the industry to scale up investment over the long term." ■

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Who is Kingspan Insulation?

Kingspan Insulation is a market-leading manufacturer of optimum performance rigid insulation products and insulated systems for building fabric and building services applications. Suitable for both new build and refurbishment projects, the products are used to supply a worldwide market across all building sectors.

The business is not just about manufacturing excellence; the Kingspan name is recognised in the industry for high levels of technical expertise, service and support for customers, and is renowned for its leading work on sustainable practice.

Key products

The premium performance Kooltherm range of rigid phenolic insulants for roofs, walls and floors are the most thermally efficient commonly used insulation products on the market, and offer an effective solution for the vast majority of building insulation applications. The popular Therma range of rigid urethane insulants provides a versatile high performance option.

As well as very low thermal conductivities, Kooltherm and Therma boards have a fibre free core, and are safe and easy to install. They are unaffected by air infiltration, and resistant to both moisture and water vapour ingress. When installed correctly they can provide reliable long term thermal performance, cutting energy usage and costs over the lifetime of the building.

Kingspan OPTIM-R has been specifically developed for applications where space is particularly limited. This cutting edge vacuum insulation panel features a microporous core which is evacuated, encased and sealed in a thin, gas-tight envelope, allowing it to achieve thermal conductivities of just 0.007 W/m·K, providing very high levels of thermal performance with far lesser thickness than even the next best performing insulation material.

For fast-track cladding or building structure applications the company offers the Kingspan TEK® Building System, Kingspan Unidek Aero® roofing system and Kingspan TEK® Cladding Panels. The products comprise high performance structural insulated panels and feature a proprietary joint arrangement which can help to create extremely airtight structures. The panels are factory pre-cut to each project's unique requirements, usually allowing them to be installed in a matter of weeks with minimal site waste.

Kingspan Insulation also has HVAC applications covered with The Kingspan KoolDuct System. The System's pre-insulated design eradicates the time-consuming lagging stage and can be used to fabricate ductwork with reliable, very low air-leakage rates, bringing significant long-term cost and energy savings.

Sustainable practice and recent achievements

Kingspan Insulation has been openly reporting on its activities since 2004, with the most recent reports being produced using Global Reporting Initiative (GRI) G3 Sustainability Reporting guidelines. This transparent, public, GRI-based reporting allows the organisation to track developments and substantiate progress across all areas, including extensive work in the community, together with initiatives to improve efficiency, reduce costs and to protect and enhance the environment.

The main manufacturing facility in Herefordshire has recently been certified to the demanding energy management standard, ISO 50001, and all Kooltherm, KoolDuct, Therma insulation products and cavity closers manufactured at Kingspan Insulation's British manufacturing facilities are now certified to BES 6001: Responsible Sourcing of Construction Products 'Very Good'.

Moving forward

In addition to its ongoing work to develop innovative new products, Kingspan Insulation is on target to attain net zero energy status across all of its manufacturing sites by 2018. To achieve this, a number of measures have been implemented to minimise energy usage with the remaining demand being met, or exceeded, using onsite renewable generation technologies, which will also be supplying power for all of the Kingspan Group UK sites. Any surplus will be fed into the national grid and the grid will also be used as a buffer to balance supply and variable demand.

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Does new home affordability have to compromise energy efficiency?

Julia Evans, Chief Executive of BSRIA gives consideration to missed opportunities when building new affordable homes...

In the run up to the 2015 elections, the Conservatives have pledged to build 100,000 new 'starter' homes that will be made available at 20% below the market rate to first time buyers under the age of 40. In order to help reduce the cost burden on developers and house builders the houses will be built on brownfield sites and will also be exempt from meeting the zero carbon standard that would normally apply to all new homes.

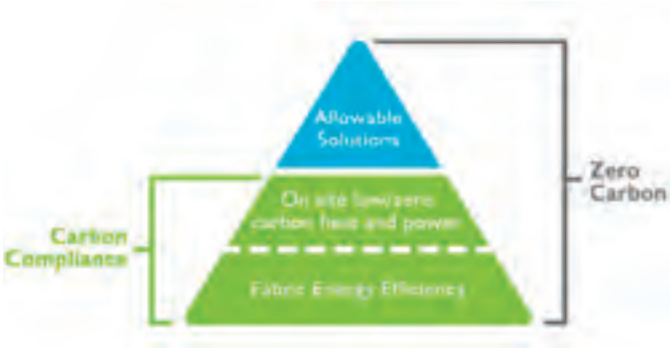
The issue of providing adequate new housing has been addressed several times in the last few years. In early 2014, the Lyon's housing review was published on behalf of the Labour Party which highlighted the inability of the supply of new homes to meet demand and called for clarity of government policy to support the house building industry. It stated that while there was a need to simplify access to suitable land through the planning process, there was an awareness and demand for high quality development, in terms of good design and sustainability, which should not be undermined.

The Red Tape challenge launched in 2012 set to rationalise the technical housing standards that developers and house builders, had to comply with in addition to the Building Regulations. This has led to the development of the Housing Standards that are being currently consulted upon and will help significantly streamline the compliance procedures for the industry.

While further simplification of procedures to support the 'starter' homes proposal may be seen as a saving

in terms of time and therefore cost, compromising on the energy efficiency of the homes appears short sighted. Scaling back the environmental standards of the new homes is likely to transfer the impact directly to the occupants in the form of high running costs.

In the Queen's speech last year the government reinforced its commitment to meeting the Zero Carbon Homes standard, to build all new homes from 2016 with no net CO_2 emissions from the use of regulated energy (for space heating and cooling, domestic hot water, fans and pumps, ventilation and fixed lighting). To achieve this a three-tiered route is recommended by the government, in which a minimum standard of fabric and services energy efficiency must be met along with a limit on CO_2 emissions for which on-site renewable energy generation may be used. The remaining emissions would be addressed by mechanisms permitted under 'Allowable Solutions' and it was announced that more details on these could be expected shortly.



The Zero Carbon Buildings Policy. Source[1]

It is important that all new homes address the requirements of current policies and help strengthen the mechanisms for future application. New homes need to be built to be resilient to future challenges of rising energy costs, fuel security and the health and well-being of occupants. An area of increasing concern with new housing is the ability of the homes to deal with rising summertime temperature. The impact of exposure to increased temperatures over prolonged durations can have significant health implications, especially for the vulnerable population that includes young children.

The Department for Communities and Local Government (DCLG) funded the Performance Gap project facilitated by the Zero Carbon Hub to look into the difference between the intended energy performance and the actual energy used by new homes. This saw participation from house builders, developers and academia among other stakeholders of the house building industry, and the findings were published in 2014 in their End of Term report [2].

This report highlighted a shortage of knowledge and skill within the industry and the urgent need for training and upskilling across the board. It was acknowledged that the industry in its present state does not have the required expertise for mass delivery of homes performing to the energy efficiency standards they were designed to.

Reducing the energy efficiency required from such a significant number of new homes would be a huge missed opportunity for addressing the shortcomings identified in several studies looking at housing in the UK. While the shortage in availability of new, affordable homes in the country is widely acknowledged, it needs to be ensured that the issue of affordability does not compromise the provision of a durable product that is a long term asset. ■

[1] http://www.zerocarbonhub.org/zero-carbon-policy/zero-carbon-policy

[2] http://www.zerocarbonhub.org/sites/default/files/resources/reports/Design_vs_As_Built_Performance_Gap_End_of_Term_Report_0.pdf

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Active Roofs and Facades in Sustainable Renovation

The Nordic Built “Active Roofs and Facades” project is supported by Nordic Innovation allowing for strong development of leading Nordic competences in the area of building renovation. This is achieved by creating transnational Public Private Partnership models to support the development towards nearly zero energy building solutions and associated performance documentation – which is required in the EU building directive.

The proposed cooperation with the building industry on developing models and the demonstration of “Active House” based sustainable renovation will create a strong Nordic alliance.

The project runs from 2014 to 2017 and will involve companies which are represented in the Nordic countries, and companies from the international Active House Alliance, www.activehouse.info. The development will use the best transnational competences and networks, creating greater possibilities to export technology.

The background of building renovation in both Nordic and European projects, where actual energy use is quite often 30-40% higher in practice compared to what was expected from calculations, and where innovative solutions are seldom used, is very much connected to the way the building industry is organised. Here, consultants will normally only want to operate in a conservative way, because they are not only selling their expertise, but also the insurance that goes with it, and also because consultants fees have been considerably reduced, so it is common to work with well-known large suppliers who can contribute to large parts of the design process. This means there is a tendency to not choose the most energy efficient solutions but to allow more mediocre

and old fashioned solutions, that the suppliers prefer. Also, because it is common knowledge that detailed performance of equipment in practice is never controlled, then there is no incentive to perform better, and higher energy use will often be explained by the user behaviour.

A main issue of the proposed Nordic Built project will be to realise the renovation projects in a much better way and secure positive involvement of consultants, so they can be more proactive, e.g. by full scale testing of innovative solutions before large scale implementation, and by monitoring key performance indicators as a basis for negotiating guarantees of performance results as part of the overall procurement process, something which also might be used to avoid normal tendering in connection to development of renovation projects.

An important challenge is to introduce holistic oriented demands in the so-called Nordic Built Charter in practice in involved demonstration projects. See: http://www.cenergia.dk/da/images/Nyheder/2014NordicBuilt/150108nordicbuilt.pdf

Added value in Nordic Built Active Roofs and Facades in Sustainable Renovation

Coordinated by the Danish energy specialist company Cenergia, the project will utilise the results from the recently finalised EU-Concerto project Green Solar Cities (www.greensolarcities.com).

These results will be presented in a book by Routledge/Earthscan in early 2015. See: www.routledge.com/books/details/9780415731195/

The main results from Copenhagen are illustrated in the two small videos below:

http://vimeo.com/98926904
and
http://vimeo.com/98926905

NORDIC BUILT

Investing in greener neighbourhoods

Steve Cole, Project Co-ordinator for the Neighbourhoods Green Partnership at the National Housing Federation highlights the importance of investing in the long term sustainability of communities...

If you've recently had an energy bill, you might be surprised to learn that in the UK we have low energy prices. You might be more surprised to learn that in many ways this is a bad thing. Historically low energy prices have meant the UK has little perceived need to invest in energy efficiency. Compared to our European cousins, our housing stock, which accounts for nearly 30% of the country's energy use, is highly inefficient.

As a result, in the UK, the sixth richest country in the world, 2.28 million homes are in fuel poverty [1]. That's one in 10 households that struggle to heat their home. Why? And, what can be done?

Housing Associations, as social enterprises who invest in the long term sustainability of communities are playing a crucial role in creating greener neighbourhoods. Working in partnership with Housing Europe to deliver the Powerhouse Nearly Zero Energy Challenge [2], one of the key things we've learned at the National Housing Federation is that with 70% of Europe's 2050 housing stock already built, any attempt to deliver energy efficiency must look at retrofit. However, individual homeowners do not represent a large enough market to develop retrofit technology at scale. Housing associations with their large stock portfolios, either individually or in partnership with other organisations, are best placed to make retrofit happen.

Whether it is it the Austrian government's substantial grant funding to ensure all new build is at the rigorous Passivhaus standard or the Dutch government's starter capital for Energiesprong, a radical energy efficient retrofit which uses energy performance contracts as tradable commodities to fund improvements, the right sort of financial support is crucial. That's why we're calling for the next government to create a Housing and Infrastructure Bank. Not just to increase the level of public and private investment in housing but to ensure that there are reliable, funding

streams which target strategic outcomes (rather than the whim of the government of the day) to deliver energy efficient new buildings and retrofit those which already exist.

Where the business conditions are right, great work is already taking place. We want to ensure this happens more often and at a lower cost. For example, Alliance Homes [3] have procured the UK's largest Social Housing renewables contract. Worth up to £600m and with the capacity to deliver photovoltaics to 75,000 homes across the South West of England, the programme not only helps to take residents out of fuel poverty through localised generation, it reduces the carbon footprint of the housing stock and generates much needed revenue to fund future energy efficiency investment programmes. Wouldn't it be great if we had the housing investment bank to support such role outs across the country?

When we think about greener neighbourhoods, we tend to think about energy but it is by far from the only area. Housing associations are significant landowners, in many cases they maintain more land than local authority parks departments. From shading in summer to grey water recycling, integrated landscaping plays an important role not just in energy and resource efficiency but in creating, or recreating, places in which people want to live and in which it is healthy to do so.

While the traditional image of a social housing landscape may be more Cell Block than South Downs National Park housing associations are increasingly delivering great places to live with great green spaces. Take Peabody's Islington Estate where the landscape of 173 Grade II listed homes was retrofitted with a new rainwater garden to minimise surface water flooding, provide a great new green space for residents and deliver a Social Return on Investment of 1.95 (higher than HS2 [4]). While the Lottery funded Active Neighbourhoods [5] project Sanctuary, Midland Heart and WM Housing Group are currently running in Birmingham, and are looking at ways residents can take ownership of and maximise the health opportunities of their green space.

That, for me, is the crux of the relationship between housing associations and greener neighbourhoods. There's a great quote by Ralf Protz of Kompetenzzentrum in Berlin: "I sometimes have the impression that low energy housing engineers feel that people should stay outside, so that they do not interfere with the perfect energy-efficient house they have created." All too often green neighbourhoods struggle because the neighbourhood is forgotten.

Housing associations understand that this is not about an adversarial relationship but a complementary one. If places truly are neighbourhoods then all of the green systems, be they energy saving or urban agriculture [6] work to their maximum potential. People are the thing that can make or break these changes and housing associations are the perfectly placed organisations to join the green with the neighbourhood. ■

[1] http://www.independent.co.uk/news/uk/politics/228m-british-households-now-living-in-fuel-poverty-9532501.html

[2] http://www.powerhouseeurope.eu/

[3] http://www.alliancehomes.org.uk/main.cfm?type=ENERGYEFFICIENCYFO1

[4] http://b.3cdn.net/nefoundation/797749042e390fcfd1_sym6b94y9.pdf

[5] http://www.neighbourhoodsgreen.org.uk/about/birmingham

[6] http://www.neighbourhoodsgreen.org.uk/resources/FoodGrowing

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The challenge and opportunity of ending cold homes

Fuel poverty affects millions of vulnerable people in the UK. Here Chiara Vitali, Parliamentary Campaigner at the Association for the Conservation of Energy discusses the contributing factors to the crisis...

Millions of people this winter will once again face a stark choice between living in a dangerously cold home and spending more than they can afford on energy bills. Many families will spend the coldest months living in one room inside their home, unable to heat the rest. People will be forced into debt to keep their home warm, or have to choose between putting money in the energy meter or food on the table.

Fuel poverty affects millions of the most vulnerable people in the UK – damaging their health and quality of life. As energy prices continue to rise, the crisis deepens.

One of the contributing factors to this crisis – the price of energy – has been the subject of heated discussion over the past year with the main political parties variously promising price freezes, energy market regulation and cuts in energy bill levies. Conspicuously absent from the majority of political debate, however, is a clear recognition of the main cause of the high levels of fuel poverty found in this country – the poor energy efficiency of our aging housing stock means a vast amount of energy is required to heat our homes.

Homes with modern levels of energy efficiency require far less energy to stay warm – as seen in countries such as Sweden where, despite a harsh climate and higher energy prices, fuel poverty levels remain much lower than in the UK. Bringing homes up to a modern standard – energy performance certificate band C or above – is the only long-term solution to fuel poverty.

Recent weeks have seen some welcome developments as voices in mainstream politics begin to publicly recognise the poor energy efficiency of our homes as the driving cause of the energy bill crisis facing the country. Some political parties have even made pledges ahead of the election to make energy efficiency a national infrastructure priority and launch a national programme of energy efficiency retrofits.

"Fuel poverty affects millions of the most vulnerable people in the UK - damaging their health and quality of life. As energy prices continue to rise, the crisis deepens."

These are all positive steps. However, we must go further. At the current rate of improvement people could be left living in dangerously cold homes for up to 45 years. Designating energy efficiency as an infrastructure priority and allocating additional resources to provide full-house retrofits could bring the homes of all those at risk of fuel poverty up to a modern standard of band C by 2025.

While this is an ambitious target, it is achievable with the right approach. Local authorities, with their detailed knowledge of the housing stock, are well placed to play a much greater role in delivering an enhanced fuel poverty programme. An area-based approach focusing on low-income areas will allow efficient and targeted delivery. The most crucial factor, however, is the level of ambition and appropriate resources to ensure that targets are delivered. Allocating a tiny fraction of the infrastructure budget to a retrofit programme could boost current rates of improvement and make ending cold homes in 10 years entirely achievable.

The case for raising our ambition is unarguable on many levels. Cold homes cost thousands of lives each year and cause misery for millions of households. Age UK estimates that treating cold home-related illnesses costs the NHS over £1bn per year. But beside the cost of inaction, the opportunity presented by rising to the challenge is great. Investment in energy efficiency is a powerful way to boost economic growth. New

modelling shows that making a major energy efficiency programme an infrastructure priority would bring a high return on investment, cut carbon emissions and create hundreds of thousands of jobs all over the country. It is time to seize the opportunity to end cold homes. ■

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The Kingspan TEK® Building System and Kingspan TEK® Cladding Panels contributed towards a final wall U-value of 0.10 W/m2.K and an air leakage rate below 0.6 air changes per hour @ 50 Pa

Zero Carbon Buildings – the final countdown

Matthew Evans, Technical Manager at Kingspan TEK considers alternative methods of construction which can meet the legal requirements of zero carbon buildings...

After several years of preparation, the introduction of the Zero Carbon Housing Standard in England is now just a year away. Whilst the legislation poses new challenges for the industry, it is also an opportunity to properly consider alternative methods of construction which have been specifically developed for highly energy efficient buildings, such as Structural Insulated Panels (SIPs).

Zero Carbon Housing Standard

As indicated in the documents which accompanied The Queen's Speech[1], the 2016 Zero Carbon Home Standard will be set at Level 5 of the Code for Sustainable Homes. It will, however, still be possible to achieve Code Level 4 provided the remaining carbon is offset through off-site allowable solutions schemes.

Even with the allowable solutions schemes, the new regulations still require a 19% reduction in carbon emissions compared with ADL1A 2013, whilst the current 15% relaxation in the Target Fabric Energy Efficiency is expected to be removed. As a result, traditional construction approaches may struggle to bridge the gap without significant reliance on renewable technologies.

A Modern Solution

To look at this in more detail, three compliant scenarios have been modelled with SAP 2012 in Figure 1. Scenario 1 is a masonry construction, Scenario 2 is a timber frame construction, and Scenario 3 features a SIP construction with an additional 75mm of rigid urethane insulation. All three scenarios focus on a fabric-first approach to compliance, raising U-values

	Scenario 1 Masonry with XPS	Scenario 2 Timber Frame with XPS	Scenario 3 SIPs with rigid urethane insulation
Floor U-Value W/m^{2}·K	0.11	0.11	0.13
Wall U-Value W/m^{2}·K	0.11	0.12	0.10
Roof U-Value W/m^{2}·K	0.11	0.11	0.11
Airtightness m³/m²/hr @ 50pa	3.0 m³/m²/hr @ 50pa	3.0 m³/m²/hr @ 50pa	1.0 m³/m²/hr @ 50pa
Thermal Mass	Medium (250)	Medium (250)	Low (100)
Thermal Bridging	29.332 (y=0.088)	29.332 (y=0.088)	17.707 (y=0.053)
Additional Measures	MVHR, 2.24m² flat plate solar hot water with very little overshading, 90 litre solar storage, waste water heat recovery	MVHR, 2.24m² flat plate solar hot water with very little overshading, 90 litre solar storage, waste water heat recovery	MVHR
TER	12.54	12.54	12.54
ADER	12.49	12.44	12.36
TFEE	48.26	48.26	48.26
DFEE	43.80	43.10	37.70

Figure 1. Example Specification Comparison[2]

above the minimal level to limit reliance on renewable technologies.

Despite the high level of thermal performance, both masonry and timber frame constructions require several additional technologies to achieve compliance. This reflects the difficulty in minimising thermal bridging and improving airtightness performance in these constructions.

To achieve lower air tightness levels, masonry constructions require parge coats, whilst timber frame constructions would require lapping and sealing of air barriers around all openings and penetrations such as switches, sockets and ceiling roses. In contrast, SIPs' inherent jointing arrangement and OSB facing allows them to achieve the required performance virtually out of the box.

The level of airtightness in all three scenarios necessitates the use of an MVHR (mechanical ventilation with heat recovery) system. These systems use the heat from outgoing stale air to warm incoming fresh air, reducing the heating demand and ensuring a constant supply of fresh air. The SIP construction requires no other renewable technology to achieve the standard.

With construction space extremely limited, it is also essential to get the most out of every available metre of land. As Figure 2 shows, the SIP construction offers notable wall and roof construction depth reductions.

	Scenario 1 Masonry Wall with Mineral Fibre Full Fill and Sloping Roof with Mineral Fibre Between and Under Rafters	Scenario 2 Timber Frame Wall with Mineral Fibre Between and Inside Studs and Sloping Roof with Mineral Fibre Between and Under Rafters	Scenario 3 SIPs with Rigid Urethane Insulation Lining
Wall (mm)	555.5	484.5	407.5
Roof (mm)	418.5	418.5	323.0

Figure 2: Total build-up thicknesses

The Kingspan TEK® Building System and Kingspan TEK® Cladding Panels comprise highly insulated Structural Insulated Panels and were recently installed on the Passivhaus certified Greenhauses development in London.

Keeping It Simple

As with any change in legislation, the challenge is to find a cost effective solution which can consistently meet the new requirements. Whilst there will be a temptation to simply top-up traditional construction approaches with renewable technologies, these often prove costly in the short term and have a limited lifespan. In contrast, a fabric-first approach should deliver maximum savings to homeowners over the long-term. SIPs offer a tried and tested route to achieving this quickly and easily. ■

[1] UK Government – The Queen's Speech: what it means for you https://www.gov.uk/government/publications/queens-speech-2014-what-it-means-for-you/queens-speech-2014-what-it-means-for-you%E2%80%8E

[2] All scenarios assume: regular condensing boiler with a room sealed fanned flume (89.5% efficient), weather compensator, A-rated fuel heating pump, no secondary heating, 300 litre hot water cylinder (2.31 kWh/day loss factor), primary pipework fully insulated, 100% low energy lighting.

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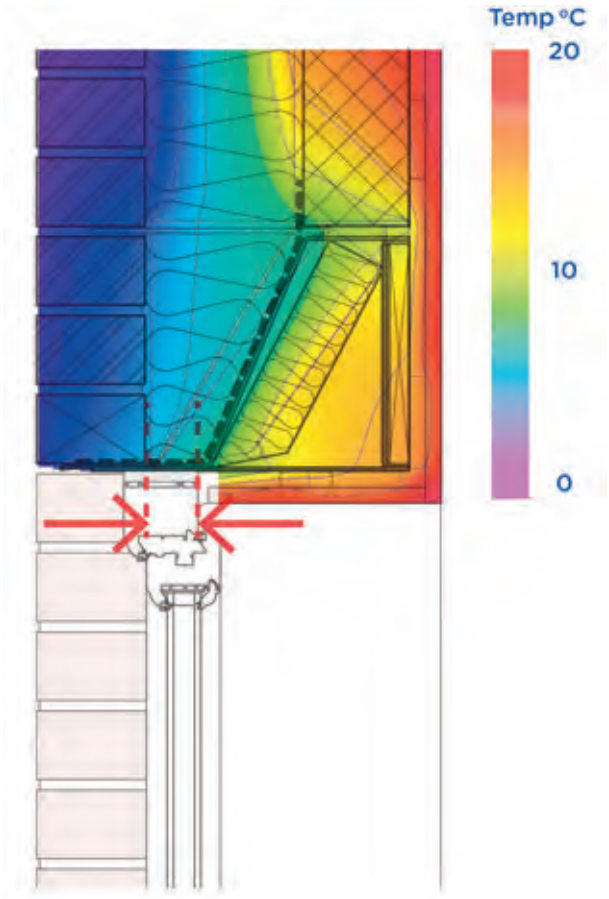
The challenges of thermal bridging

Alex Taylor, NHBC Senior Energy Consultant, examines the challenges that thermal bridging presents from an energy assessors point of view...

The Standard Assessment Procedure (SAP) now contains 42 separate definitions for thermal bridging details. As part of an energy assessor's role, they need to understand how each detail is applied whilst assessing a dwelling for compliance with Part L1a 2013.

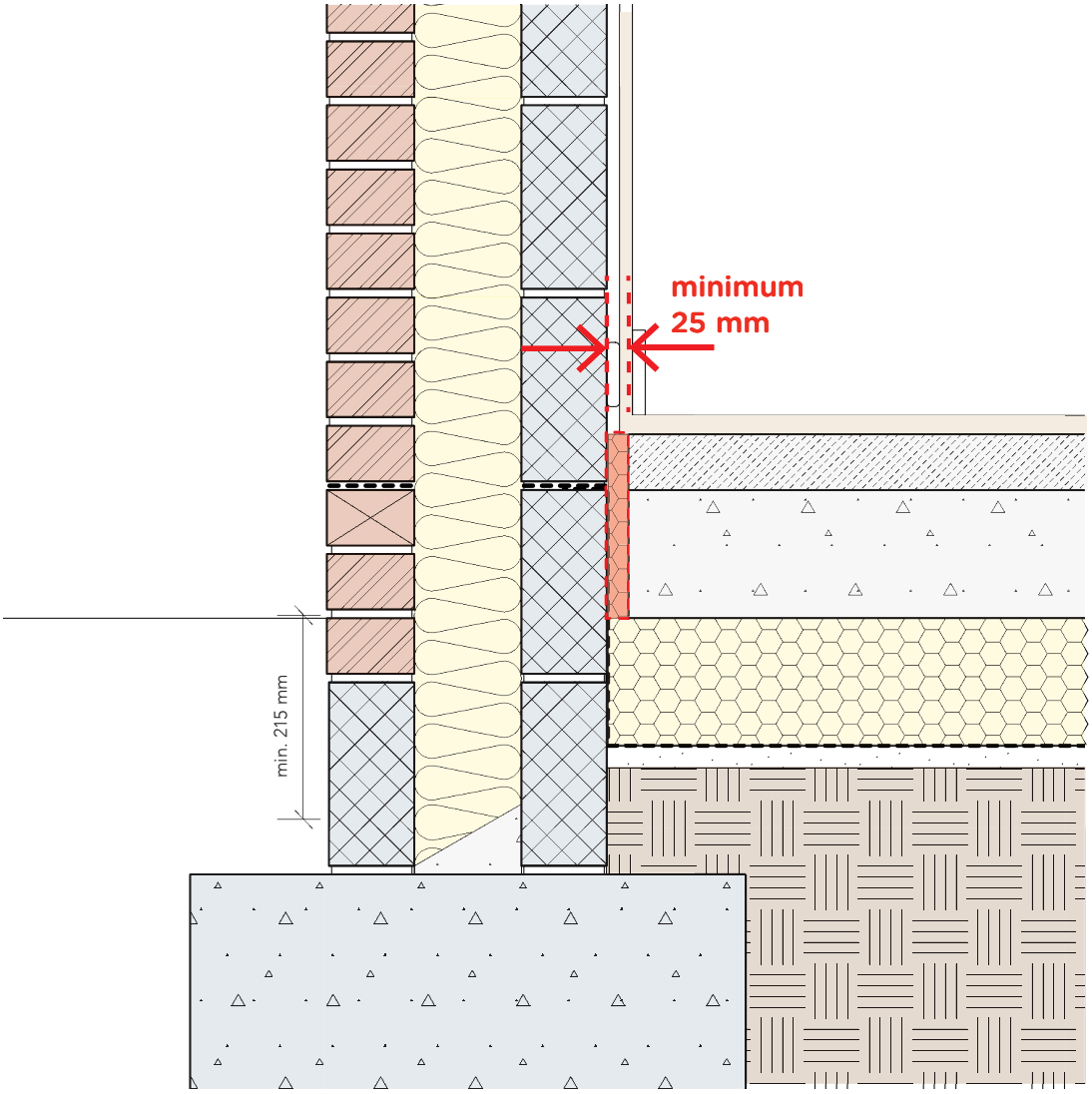
It is unlikely, but not completely impossible, that any one dwelling will contain all junctions, but spread across a single development all 42 may be encountered.

What does this all mean, and why has so much effort gone into this seemingly dark art? In 2006 as building regulations turned their attention to reducing carbon dioxide emissions, the amount of insulation going into a typical dwelling rose by 20%. This had an unfortunate consequence of exacerbating the effect of thermal bridges at junctions in the building fabric and at structural openings. These possibly unchecked paths had the potential for significant cold spots within the dwelling which could lead to internal condensation and mould growth.



Where combination steel box lintels are commonly used, considerable heat loss may occur because of the proportion of steel, the minimal and discontinuous insulation, and the length of the bridge

At the time, Accredited Construction Details (ACDs) were introduced as design/construction details aimed at preventing these problems. Additional heat loss from the dwelling was modelled in SAP by multiplying the total exposed area by a heat loss factor (or 'y-value') of 0.08 W/m²K. If ACDs were not followed, the additional heat loss almost doubled to a default y-value of 0.15 W/m²K. An alternative option in SAP 2005 was for the designer to provide a set of psi values for their proposed constructions (a psi value provides a measure of the heat loss per unit length of a junction). Once in receipt of these details the additional heat loss from thermal bridging would be determined by the SAP assessor by measuring the length of each junction (thermal bridge) and multiplying by the appropriate psi value. The summation of the heat loss from all junctions,



expressed over the total exposed area, would give the dwelling's y-value.

At this time SAP 2005 considered 16 junctions – many common junctions were excluded, and SAP conventions sought to plug the gap – any 'junction' which did not appear in SAP or have a convention was ignored (in the SAP calculation).

From Part L1a 2010 (SAP 2009) the y-value approach based on the adoption of a standard detail set was no longer permitted, and in order to determine heat loss through thermal bridging, the energy assessor had to adopt the 'lengthy' approach detailed above. In SAP 2009 the number of junctions also rose to 23 – now recognising that flat roofs and junctions to party walls had a part to play in this uncontrolled heat loss - and further conventions continued to address 'unreferenced junctions'.

Psi values can be provided from a multitude of sources, and although they should be prepared to the same standard (BRE 497) there is no formal accreditation scheme and therefore it is unlikely an energy assessor would be able to question the values presented. Energy assessors can be presented with psi values from a variety of sources:

- SAP Appendix K Default values – in the absence of a detail the assessor must resort to these – compliance with Part L 2013 is very unlikely if this is the sole source;

- SAP Appendix K Accredited Values – by adopting the ACDs published to support Part L in 2006, more favourable psi values can be adopted;

- Publicly-available details, such as those published by NHBC Foundation (Part L 2013 – Where to

Alex Taylor, Senior Energy Consultant

Start – Masonry & Timber Frame Construction), Constructive Details Limited, Concrete Block Association, Scottish Building Standards to name but a few;

- Product Specific Details – for example a lintel manufacturer may have commissioned details for use alongside their product;

- Bespoke Details – most likely the final resort (as the calculations can be quite expensive, and may not always return a favourable answer), these may be commissioned for junctions which are unique to a particular builder or development.

During the design of the project there needs to be consultation between the energy assessor and the builder's design team to provide a fully working specification which will deliver compliance with Part L. At the end of this work the SAP Ratings and supporting documentation should be provided to the builder for submission to building control and delivery to site. Within the package of information there should be a summary of all thermal bridge details used in the energy calculations with appropriate references. The builder should now be absolutely clear on what has been used to determine compliance and therefore what they need to build on site – if they are not it is very likely the performance gap between the SAP and EPC and the constructed dwelling will continue to exist.

In accordance with Regulation 27, building work should only commence once the above has been completed. So in order to ensure the dwellings continue to comply and to provide a degree of checking on site, what should Building Control be looking for?

- Is a detailed specification available on site which relates to the energy assessments?

- Does the specification include references to thermal bridges?

- Does the drawing pack on site include details of the referenced thermal bridges?

If the answer to any of the above is 'no', it is highly unlikely the homes are going to be constructed as per the specification agreed at the design stage. Does this mean the homes are going to be less energy efficient? Not necessarily, but any variations need to be fed back through the design office and remodelled within SAP, to ensure continued compliance with the requirements. ■

Alex Taylor
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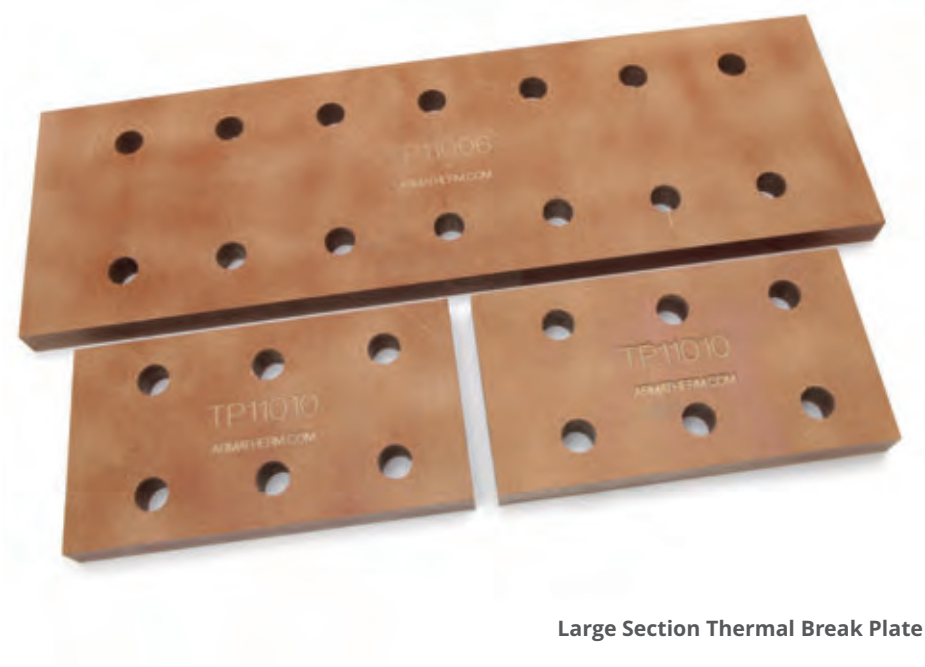
ARMATHERM™ Bolt-through structural thermal breaks

Why not just use GRP?

Cold bridging is now a recognised problem in any location the building insulation envelope is penetrated by steel work. While bespoke custom made thermal break connections offer excellent performance they are often cumbersome to fit and more often cost prohibitive especially on large section connections.

Armatherm™ supplying both Europe and the USA with over 10 years service in the industry offers a simple bolt through solution. The high thermal resistance offers excellent cold break performance. The advantage of a bolt through design is ease of installation, fast production and simplicity of the connection detail.



Large Section Thermal Break Plate

Given these advantages there is an increasing trend for engineers to specify a simple high strength "plastic" with a low thermal conductivity. The assumption being this will effectively address the issue.

In such an application, the thermal break plate is subjected to compression, shear, and flexural loads. In some applications these loads can be excessively high. While some materials will have an acceptable compressive strength to withstand these loads originally there is little concern or data to support the creep behaviour of the product. In the event of a material exhibiting even minimal creep the tension in the fixings of the connection will be compromised.

Armatherm™ FR is the only structural thermal break offering a close woven fabric reinforcement to eliminate this concern. Armatherm™ has undergone independent structural testing to not only confirm the thermal break pads will resist any creep but more importantly the isolation washers, which on the tension side of the connection see a much higher compressive stress than the pad also perform sufficiently well to ensure connection tension is maintained. Copies of this full report are available by emailing sales@armadillonv.com

A further element of connection design which may not be addressed with low cost solutions is the degree of friction offered in a shear connection detail.

The coefficient of friction value of Armatherm™ material can be used in conjunction with the applied compressive stress on the material to help resist shear load transfer through the connection.

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Improving thermal bridging outcomes

Fanoula Ziouzia of the British Board of Agrément outlines the development and implementation of a scheme for thermal bridging details, establishing an independent accreditation process for pertinent products and systems...

With the increasing drive for thermal efficiency and stricter regulatory requirements, the adoption of an industry-wide approach to new building methods and the development of materials designed to minimise heat loss is extremely important. It is estimated that up to 35% of a building's heat loss could be attributed to the existence of thermal bridges, a significant amount and therefore a key consideration in the drive to improve the energy efficiency of buildings.

Thermal bridging is the term used to refer to the unwanted loss of heat from the interior to the exterior of a building occurring either:

a) through leakage at junctions between different construction element types, such as where a wall meets a floor referred to as non-repeating or linear thermal bridging; or

b) via construction elements which traverse insulating voids, such as studs in a timber frame wall or wall ties in a cavity wall; this is referred to as repeating or non-linear thermal bridging.

Both of these aspects of building construction, whilst unavoidable, can create vulnerable areas which form a 'bridge' across which heat can escape.

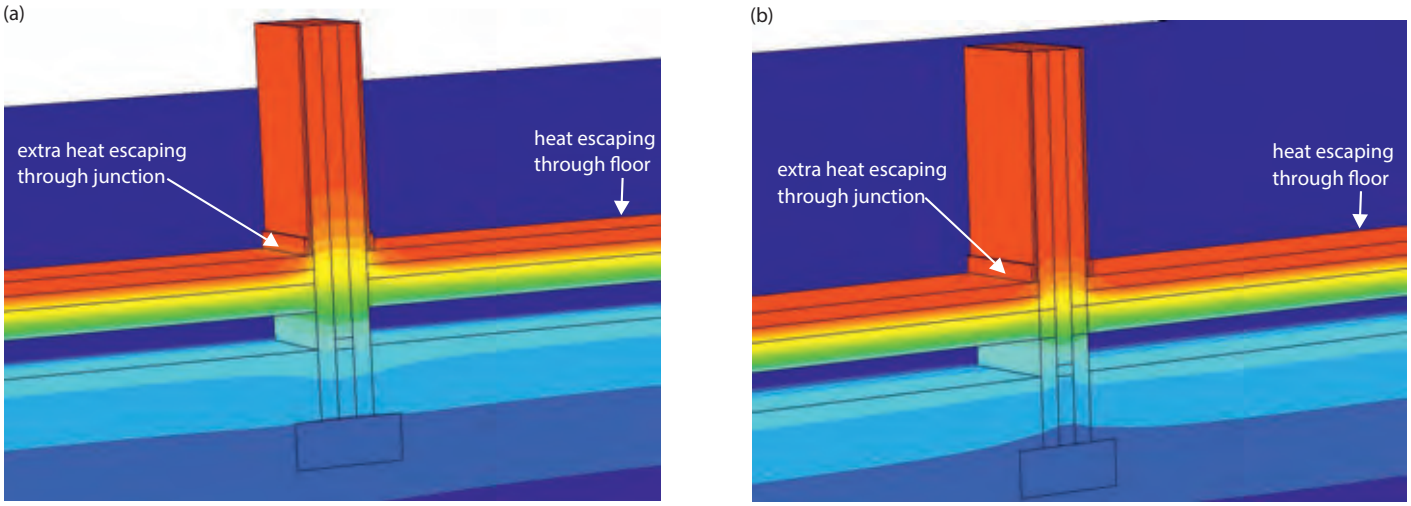
Whilst repeating thermal bridging factors are often incorporated into the quoted U-values of the particular building element which contains these types of bridge, the issues involved with non-repeating thermal bridging are complex and far from straightforward. Aside from the fact that completely eradicating heat loss through these small but often numerous constructional details may not actually be achievable, assessing the degree of heat lost in this way in the first instance has also been extremely difficult, since until recently, hard and fast rules and assumptions for modelling did not exist.

"The BBA, in conjunction with other specialist industry bodies, proposed the development and implementation of a scheme for thermal bridging details. The scheme would also promote the widest possible industry awareness of, and participation in resolving the problem, and encourage competition among companies to provide more thermally-efficient products and systems."

In an attempt to determine some basis for accurately assessing heat loss via thermal bridging, and in order to establish an independent accreditation process for pertinent products and systems, The British Board of Agrément (BBA), in conjunction with other specialist industry bodies, proposed the development and implementation of a scheme for thermal bridging details. The scheme would also promote the widest possible industry awareness of, and participation in resolving the problem, and encourage competition among companies to provide more thermally-efficient products and systems.

A number of handbooks with construction details, covering both masonry and timber-frame structures, and other supporting documents have been produced which offer comprehensive assistance in

Party wall/ground floor junction - heat loss at thermal bridges



High density bock

Low density block

The diagram illustrates the complexities of thermal bridging assessment and its counter-intuitive nature, e.g. the greater resistance to direct heat lost through the high-density block conversely manifests as a greater proportional heat loss at junctions.

detailing areas of potential thermal bridging and advising on ways of minimising the problem. Such construction details are important not only for the new build market but also for retrofit projects, where issues such as condensation risk and increased energy efficiency are becoming a major focus. These handbooks can be found on the Constructive Details website (www.constructivedetails.co.uk) and are available free of charge, after a brief registration process. The documents have been well received by the industry as they provide clear, easy to read drawings, straightforward instructions and a checklist to guide the building process.

The BBA now also includes information on non-repeating thermal bridging in relevant BBA Certificates, such as those dealing with building systems, and offers a thermal modelling service for producing and validating data on heat lost in this way. The BBA can also provide a separate assessment report providing supplementary heat loss information for clients who have multiple Certificates, obviating the necessity for individual Certificate amendments or reissues. For the future, the BBA foresees playing an increasing part in looking at the overall issues associated with producing, maintaining and improving thermal bridging data and modelling methods, and in ensuring that any solutions implemented are accessible at all levels and across the entire industry. ■

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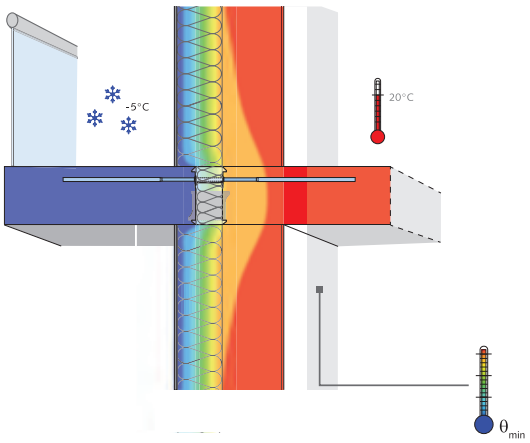
Planning to keep the warmth in

With an increasing demand for energy efficiency and a growing requirement for apartments with private outside spaces, Halfen's next generation of insulated balcony connections rises to the challenge. Building upon Halfen's successful range of insulated balcony connections, which were introduced to minimise heat loss through cold bridging and to reduce the risk of mould growth, our ongoing commitment to meet market expectations and regulatory changes has ensured we have continued to innovate and pass on improvements to our customers and adhere to new standards.

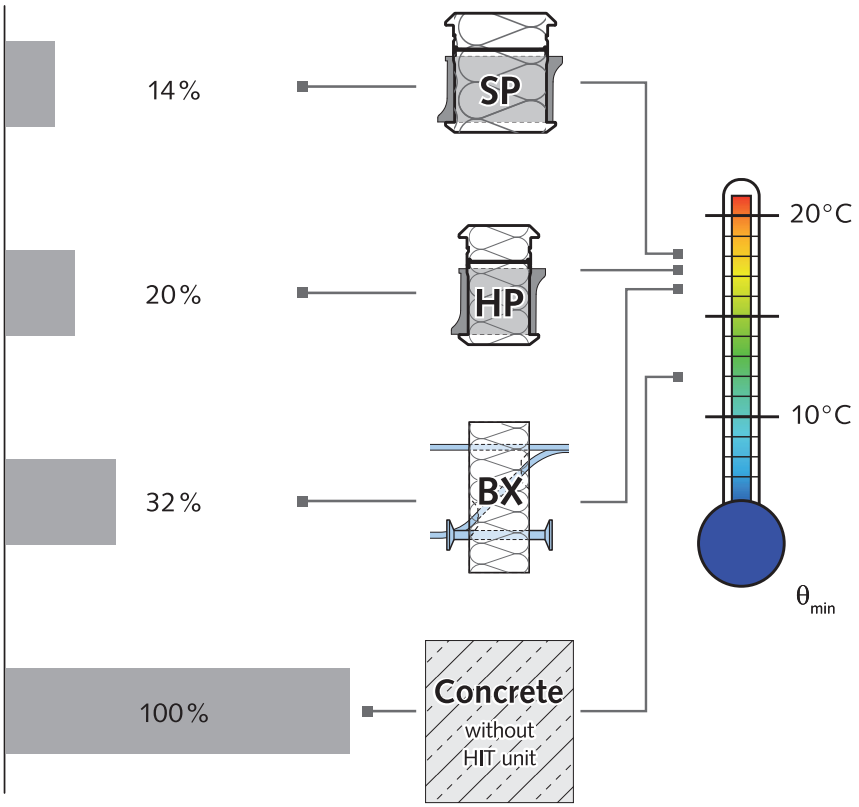
Improved thermal performance

Naturally one of the primary objectives for our insulated connections is to achieve the best thermal performance possible. Our new high performance HIT-HP (80mm thick) insulated connection currently offers up to a 37% improvement in thermal efficiency in comparison to our previous HIT-BX designs.

In addition our latest superior performance HIT-SP (120mm thick) insulated connection designed for larger cavities can deliver a 56% thermal improvement when compared with the HIT-BX design.



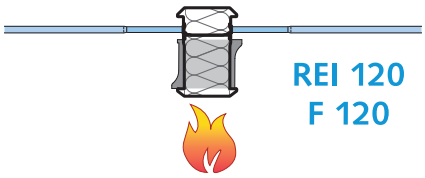
In recognition of these efficiency improvements the HIT-HP and HIT-SP products have been independently approved for Passivhaus applications by the world renowned Passive House Institute.



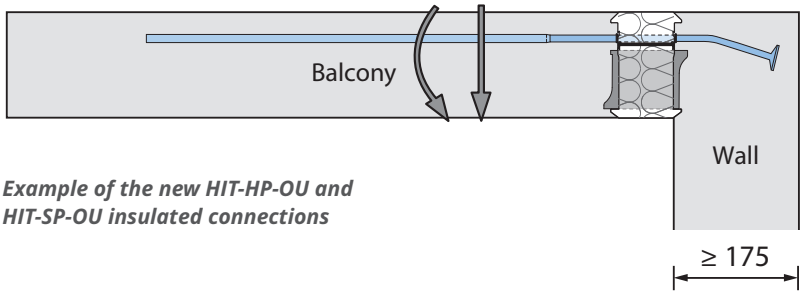
Fire protection as standard

As part of our continuous product development programme and acknowledgment of an evolving construction environment we identified a need to supply our insulated connections with fire protection as standard, rather than an optional extra.

Originally our insulated connections were fitted with a fibre board to the top and underside of the insulation block and generally offered 90 minutes of fire protection. However, the fibre board materials that used to protect the load bearing elements were fragile and easily damaged during the construction phase. Additionally with clients frequently requesting thermal breaks for more elaborately shaped balconies, walkways, and landings it was not always practically possible to maintain full continuity of the fire protection using conventional methods.



All our HIT-HP and HIT-SP insulated connections are supplied with 2 hours fire protection as standard



Example of the new HIT-HP-OU and HIT-SP-OU insulated connections

In recognition of our customers' needs for a robust product more capable of withstanding normal construction activity, we adapted the insulated connections to better safeguard the integrity of the fire protection.

Our solution was to integrate the fire protection within the insulation layer to provide allround fire protection of the load bearing components, which also allowed us to raise the performance level by 25% so we can now offer 2 hours fire protection. Moreover to enhance the products overall sturdiness we encapsulated the thermal layer within a tough casing.

Innovation

The key impetus for modernising our insulated connections was to deliver efficiencies in thermal performance, as demonstrated previously. This was largely accomplished by the introduction of our patented combined compression shear bearing (CSB). Besides the thermal merits presented by the CSB innovation we have also capitalised on some remarkable technical benefits.

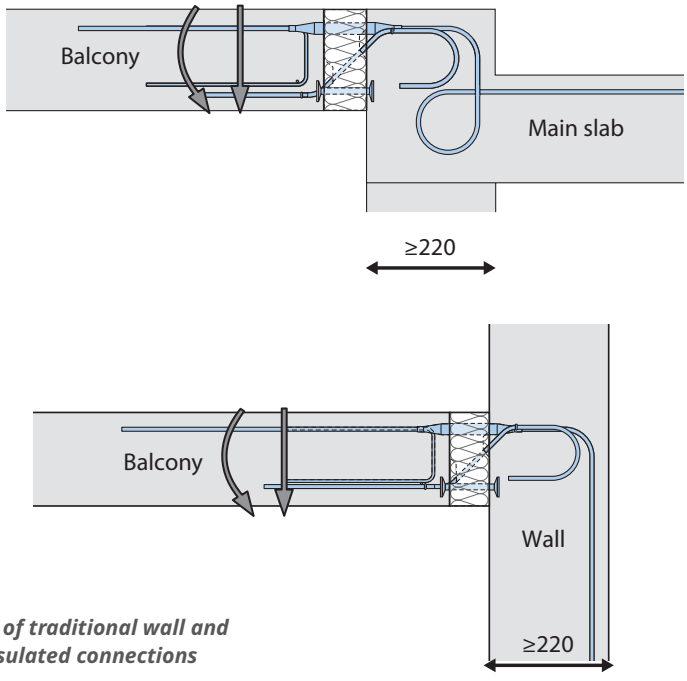
The previous load bearing components were constrained by the limitations of fabricating conventional reinforcement, which significantly reduced the available options for corner cantilever balconies, connections into walls, lift cores, offsets and edge beams. However, with the HIT-HP and SP variations we are now able to increase the shear capacity by up 60% when using the CSB's even when designing balcony slabs as thin as 160mm. This particularly widens the design options for thinner concrete slabs between 160mm to 220mm.

Expanding on the concept of connecting into more slender concrete geometries we turned to our short anchor technology. Our longstanding HIT-BX-WU and HIT-BX-BH thermal connections, for example, require a minimum 220mm thick wall or edge beam and have a reduced in structural capacity in comparison to floor slab connections.

Our replacement HIT-HP-OU and HIT-SP-OU units on the other hand fully exploit our new short anchoring technology and can be fixed into 175mm thick walls and edge beams without conceding on structural capacity.

Reassurance

Installing confidence in our products and meeting current construction regulations has been a core focus for Halfen. Recently we have successfully secured a European wide technical approval (ETA) for our 160mm high to 350mm high HIT-HP and SP insulated connections. In turn this has enabled our insulation HIT balcony connections to be CE marked, which means great protection, safety, quality and service from Halfen.



Example of traditional wall and offset insulated connections

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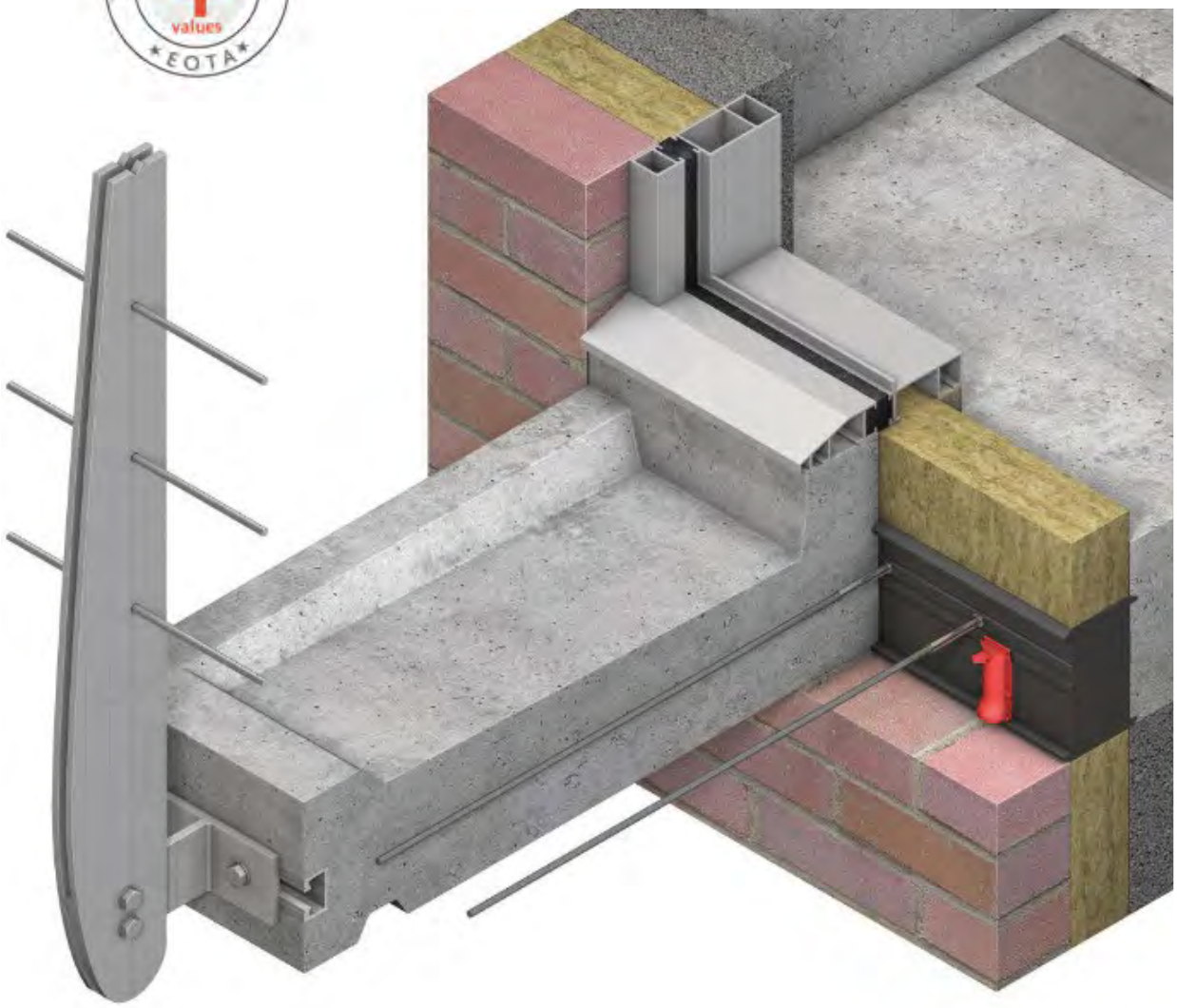

Halfen HIT insulated balcony connections with ETA approval and CE marking

Passive House Institute

Certified

CE

European Technical Approval

ETA-13/0546

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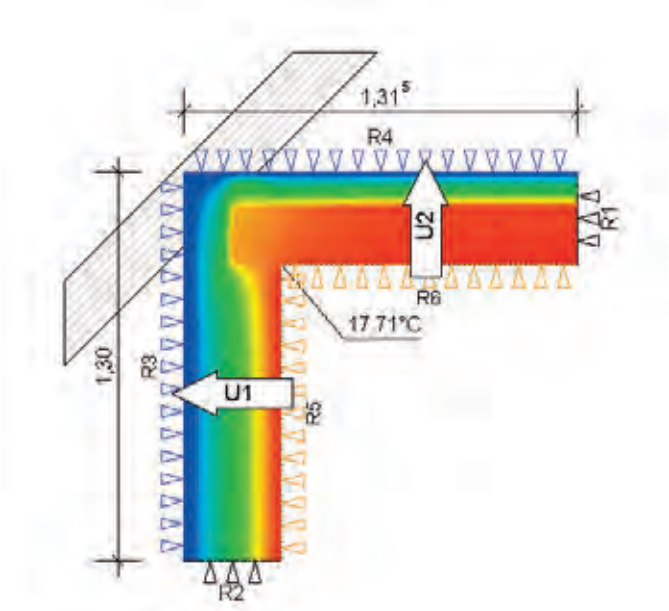
Thermal model calculations: A lesson in accuracy

Andrew Lundberg, thermal modelling expert at the Association of Thermal Modellers details the challenges faced in accurately assessing building fabric performance, hailing competency as the key...

When it comes to delivering low-energy buildings in a bid to produce homes which come with both increased comfort and lower running costs for occupants, the race is well and truly on. Any designer or specifier would likely confess to sometimes struggling to keep up with the myriad of new products entering the market claiming to deliver what their predecessors or competitors never could – even lower-energy buildings. Running in parallel with these challenges is also the need to keep one's eye on regulatory compliance, something which has essentially become a numbers game, particularly when it comes to Part L1a for new dwellings.

Amid the rapid development of renewable heat and electricity producing products, it is often easy to forget that the best approach to energy efficiency is not to produce required energy in an efficient way, but to limit the required amount of energy in the first place. This requires first and foremost, a fabric-first approach, which can have a great effect on final heat demand. SAP assessors, who may or may not be members of the design team, are having to find new ways of inputting building data in order to demonstrate regulatory compliance. The risk then becomes one whereby the SAP assessor has to input a value which the actual building, by design, cannot achieve. One area receiving increased focus is thermal bridging. However it is still too little understood by the industry. What is a thermal bridge? How is it assessed? Who should assess it, and what qualifications should they have?

Thermal bridges exist in every single building ever built. Anywhere that otherwise uniform heat flow through the building fabric is affected by a change in



the fabric's properties, a thermal bridge is presented. This could be junctions of the various building elements, such as wall, floor, roof & window intersections, or any location whereby the building fabric is penetrated by a single point item such as a beam resting on a wall. Even in a straight wall with an embedded structural component at one point, a thermal bridge is present due to the variation in heat flow around that component, even if the U-value is maintained at the same value across the entire structure.

Thermal bridges are assessed in accordance with a national convention document produce by the BRE (Building Research Establishment) entitled BR497: Conventions for calculating linear thermal transmittance and temperature factors. This is carried out using numerical analysis software by means of finite element analysis. As the name suggests, the assessment criteria focuses both on determining

Continued on page 180...

Bridging the gap

with appropriate structural thermal breaks

by Stephen Blundell, Technical Director

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

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

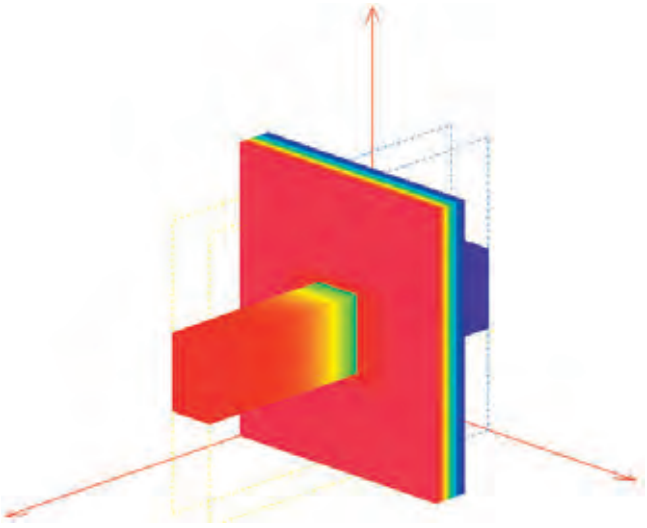
To complicate matters further there are few standard construction details where thermal breaks are incorporated because of the wide variety of construction materials and systems forming the building envelope, internal structure and external features. The clever part is to choose a thermal break plate solution that is both simple, effective and able to accommodate your detailing and not the manufacturer's system.

Unlike proprietary mechanical thermal break systems the plate type thermal break is very simple to incorporate into most details. This flexibility means that it can be used for a variety of applications and is not restricted by the modular nature of proprietary systems. It provides the designer with greater freedom to develop a bespoke solution for the project.

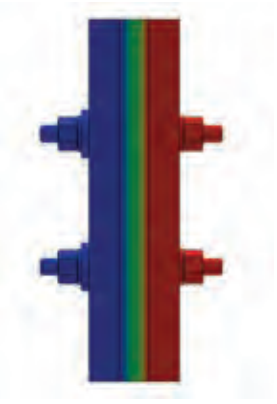
If a structural thermal break is used, irrespective of whether it is a mechanical system or a simple plate, it will require thermal modelling to comply with Part L and to ensure the risk of condensation is eliminated. This is not just limited to the connection and thermal break but the whole fabric of the structure including the contributing external and internal structure. It is very important that the detailing of the envelope and location of the thermal break plate relative to the insulation layer is correct.

Design teams are very familiar with the thermal requirements of the planar elements (walls, roofs, windows etc.), but less so about the point thermal bridges. A decision to undertake the analysis for a repeating balcony detail on a large housing scheme based on cost is much easier than perhaps a project with lots of different cold bridge details where the cost of the analysis is prohibitive.

The thermal modelling process should be undertaken early in the design process but all too often it is left until the issue is raised by the supply chain during the construction phase. At this late stage it is often difficult for designers to revisit this important issue because of the potential for delaying the project or simply trying to avoid additional cost and time when the design fees have been all but expended. We are happy to assist designers in the early stages of projects or provide advice where decision making has been left late.



Thermal Model to identify the thickness of a Thermal Break Plate



Structural connections incorporating thermal break plates need to perform well both thermally and structurally, and of course there will be a compromise to satisfy both requirements. However, it is absolutely vital that the thermal break material is fit for purpose.

Whilst compressive strength is an obvious requirement for thermal break plates, the potential for creep under constant load may lead to significant serviceability issues further down the line when the contractor has long since finished on site. It is therefore important that the material properties required for both thermal and structural performance are independently evaluated and accredited.

The structural performance of connections can be seriously impaired if inappropriate thermal break materials are incorporated, or if the connection design does not properly consider the inclusion of the thermal break material.

Farrat's structural thermal break plates are accredited by the Steel Construction Institute (SCI) under their Assessed Product Scheme and they also meet NHBC's technical requirements.

"The Steel Construction Institute (SCI) and Farrat Isolevel Ltd have been working together to establish the structural and thermal performance of thermal break materials and the implications of including thermal break plates for the design of structural steelwork connections." – Andrew Way, Manager of Light Gauge Construction and Product Assessment

We have produced a technical guide for our thermal breaks covering material properties, thermal design and structural methodology.

For further information, please contact sales@farrat.com

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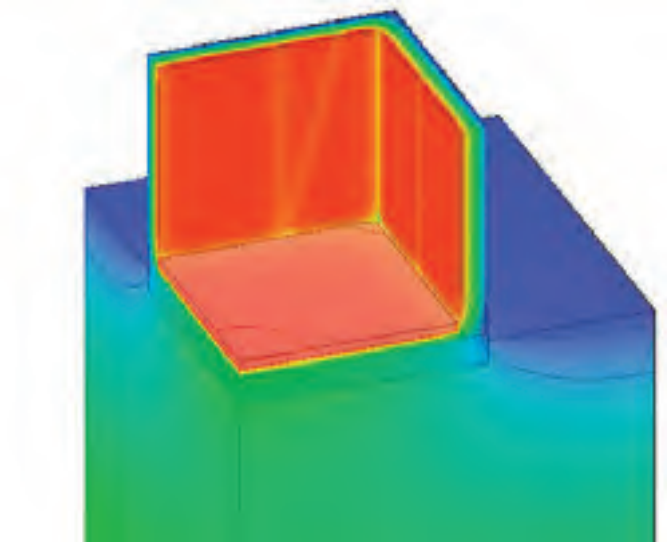
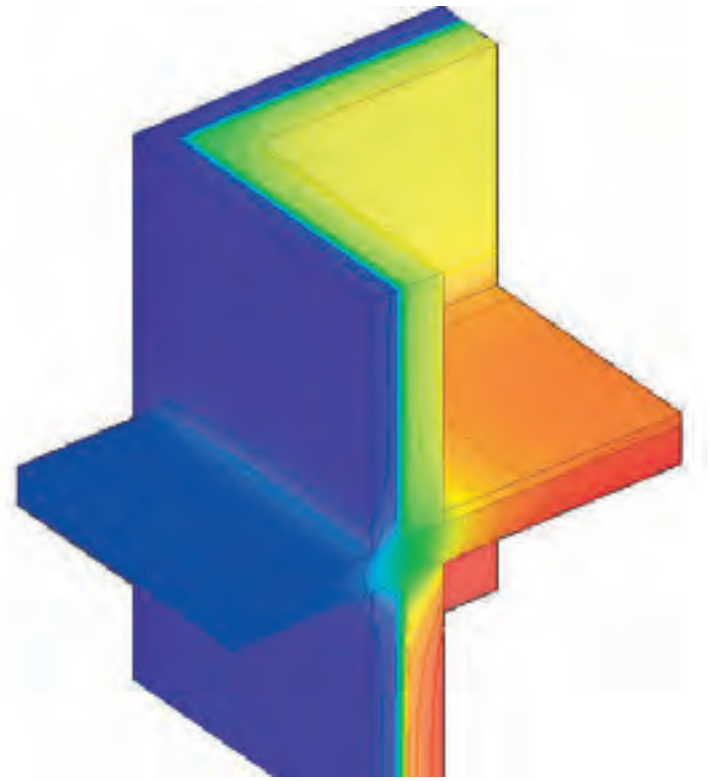


Continued from page 177...

the excess energy being lost at junctions, as well as surface temperatures which occur at junctions and what the subsequent risk of mould growth and surface condensation may be for various building types. The former criterion will result in changes to energy consumption and directly affect heating bills, the latter criterion will determine whether mould is likely to form at a specific location under standard conditions. So we must remind ourselves that mould growth doesn't happen by coincidence...it's an inherent design property of our buildings. It therefore makes sense to focus firstly on eliminating mould growth, and secondly on reducing excess heat loss across the junction. The thermal bridge assessor needs to have a keen understanding of both phenomena.

So who is the thermal bridge assessor, who determines their competence and where can one find one? Under the latest edition of Approved Document L1a, the competent assessor is someone who has completed training in the software tool that they are using and has achieved results within the range of accuracy in assessing the validation cases in the aforementioned document BR497. No further requirements of the assessor are presented in the document. Previous mentions of a national government-approved assessors register have been removed from the latest iteration, so the onus on finding a 'competent' assessor lies with whoever is responsible for providing the thermal bridge values for the junctions to the SAP assessor, or the SAP assessor themselves, where non-standard values are being used. The questions being asked of anyone claiming competency therefore should be, at least, "have you completed formal training in thermal bridge assessment?", and "can you demonstrate that you've completed the validation cases from BR497 within the stated tolerances?" Once these questions are answered, the competent thermal bridge assessor is in a position to deliver accurate assessments of junctions, advise on necessary changes to junction design to reduce heat loss, thereby reducing heat losses via thermal bridging, improving SAP values, and eliminating mould growth risk.

In determining energy loss via thermal bridging, three distinct approaches are presented in the Approved Document L1a. Firstly, the building can be designed in accordance with the DCLG Approved Construction Details or another government-approved source involving independent assessment of the construction method. This allows the psi-value for each junction to be taken from table K.1 of the SAP



Andrew Lundberg
Passivate

2012 document. Simple? Well almost too much so. The table presents one psi-value for each junction type, e.g. wall/floor junction with insulation over slab, and is applicable to any construction type and over any range of U-values. The reality is that an external wall corner in a timber frame will likely have a very different psi-value compared to that of an external wall corner built in masonry cavity wall construction and so on. Furthermore, changes to U-values of planar elements will result in changes to the psi-value for the same junction. So although one may satisfy building control with this method of accounting for thermal bridging, it would be folly to think that it's in any way an accurate account of a junction's performance. Catalogues of thermal bridges are also being produced by some product manufacturers or private organisations, however, if one is truly interested in an accurate determination of building fabric performance, one should look closely at the background to any published psi-values. Many of these sources have psi-values which are applicable over any range of U-values below a liberal value, making them vague and ambiguous.

Where a junction is not constructed in accordance with the ACD, a default psi-value for the equivalent junction should be used from table K.1. These values are exactly double those of the equivalent ACD psi-value, which means that improvements to the building design elsewhere will have to compensate for the fact that this bespoke junction hasn't been assessed by a thermal modeller, in order to maintain compliance. This will almost certainly have cost implications for the overall design & build. Another option is to enter a global psi-value (y-factor) of 0.15W/m^{2}K, which in theory encompasses the combined heat losses from all thermal bridges in one figure. This is certainly an approach best avoided, indeed the compensatory measures required elsewhere in the design due to its use could be beyond sensible or reasonable. To put this figure in context, if a building is designed with an average elemental U-value of 0.15W/m^{2}K, and a thermal bridge y-factor of 0.15W/m^{2}K is also used, essentially it is being stated that 50% of building fabric heat losses are due to thermal bridging alone. This is in almost any standard building a gross over-estimation.

And so we return to the concept of the competent thermal modeller. Their integration into the design team from the outset can ensure that junctions are designed in a manner which reduces excess heat loss & eliminates mould growth whilst also maintaining build-ability, reducing the need for expensive compensatory measures elsewhere in the design, and ensuring accurate estimation of building fabric performance. Until we are at a stage of assessing every design by modelling, or available catalogues of details and their respective psi-values take a quantum leap, we are in energy terms thinking one-dimensionally, with our estimations of performance in the second or third dimension being at best an uneducated guess. ■

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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).

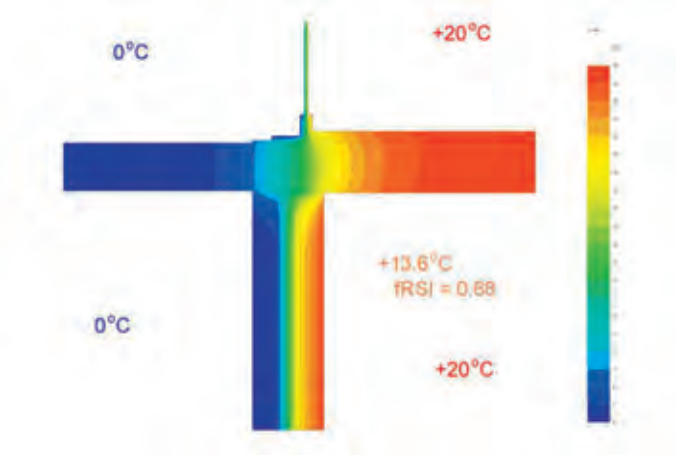

Fig 8. Direct connection (Case 1). This detail *DOES NOT* conform with UK Building Regulations Part L requirements for minimum temperature factor in dwellings (f_{RSi} = 0.75)

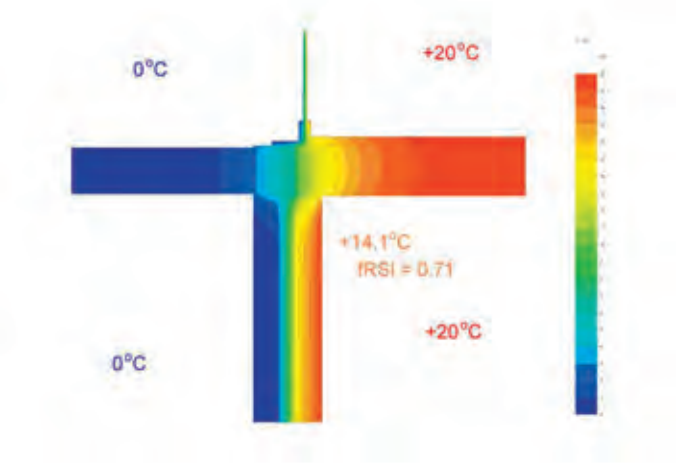

Fig 10. 20mm pad connection (Case 3). This detail *DOES NOT* conform with UK Building Regulations Part L requirements for minimum temperature factor in dwellings (f_{RSi} = 0.75)

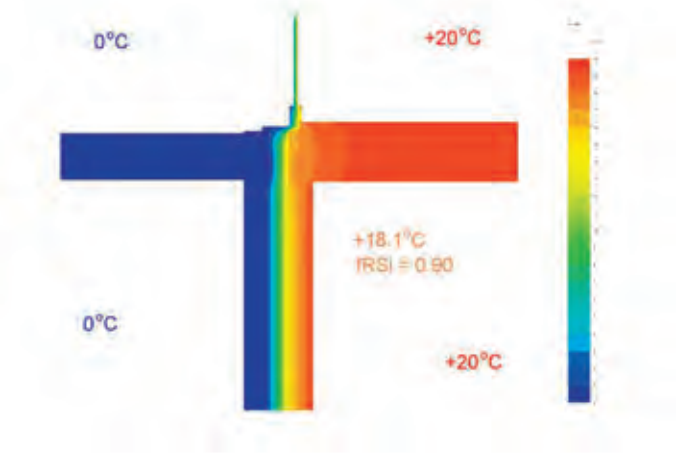

Fig 11. KS14 H200 connection (Case 4) where this detail DOES CONFORM with UK Building Regulations Part L requirements for minimum temperature factor in dwellings (f_{RSi} = 0.75)

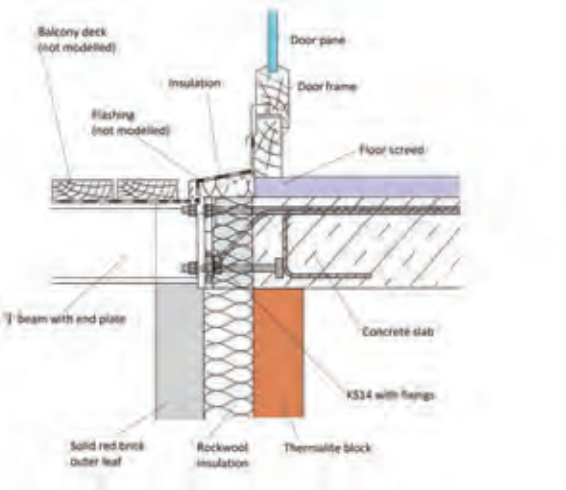

Fig 2. Schöck KS14 unit used with masonry wall and concrete slab

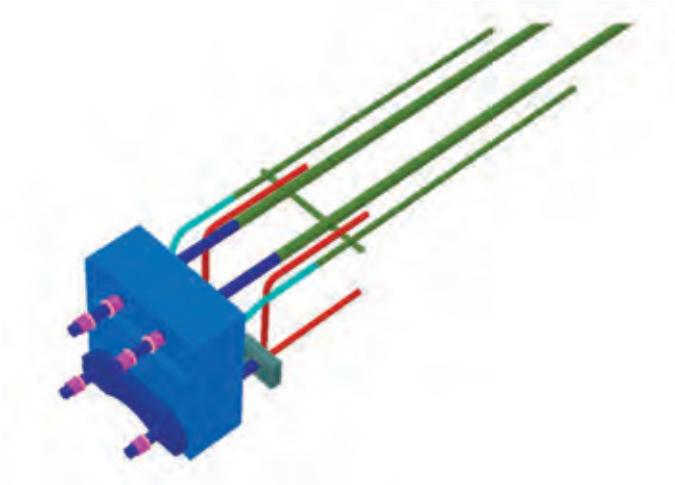

Fig 3. The KS14 unit SOLIDO model (surrounding construction omitted for clarity)

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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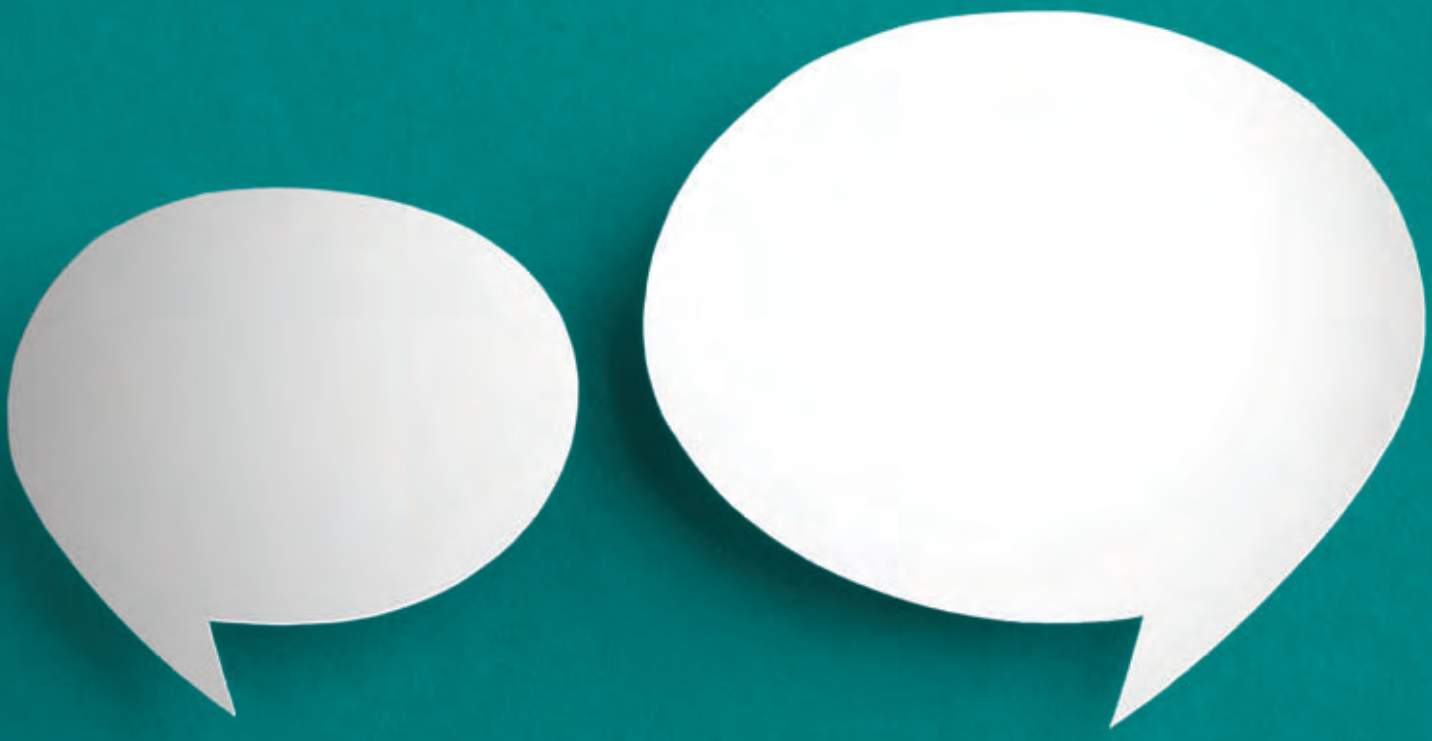

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A New Model for Affordable Housing

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

Stacey Temprell
Residential Sector Director

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

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

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

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

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

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

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

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

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

SAINT-GOBAIN

Insulating party wall cavities – a crucial step

With the welcome announcement from DECC that insulating existing party wall cavities is now included as a measure in the latest RdSAP calculations for both the Green Deal and ECO funding, Nick Ralph from MIMA explains why measures such as this are so crucial...

MIMA was instrumental in influencing the latest changes to RdSAP, through its work with Leeds Beckett University and the BRE; which proved the case for retrofitting existing party cavity walls using blown fibre mineral wool.

Over recent years MIMA has funded a series of co-heating trials and forensic investigations by the Buildings and Sustainability Group of the School of the Built Environment at Leeds Beckett University, to gain a detailed understanding of the factors influencing and contributing to party wall bypass, as well as quantifying its effect.

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, initial studies 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.

Where cold air enters the uninsulated cavity at exposed edges, the uninsulated cavity creates a 'chimney stack effect' as the cold air rises and is warmed by heat conducted through the leaves of the party wall from the adjoining homes, before escaping from the cavity to the external environment – either into the loft space or through the roof. Additionally, 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.

Once this highly detailed work had been undertaken and widely accepted, it was possible to monitor a number of dwellings in lower detail, whilst still making quantitative measurements of heat flux, to show that the heat loss phenomenon was common to all party walls with cavities to the roof. The quantum of heat losses was also considered to be consistent.

Leeds Beckett University's work also demonstrated that filling the cavity with insulation would consistently reduce this heat loss. 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 CO_2 – equating to a £70 reduction in household energy costs. RdSAP attributes a heat loss equivalent to an effective U-value of 0.50 W/m^2K to an unfilled party wall with a cavity to the loft and a U-value of 0.20 W/m^2K when it is filled.

When you take into account estimates that there are 3.77million bypass walls in England alone, equating to 5 million households, the potential to reduce fuel usage and CO_2 emissions through filling party cavity walls with blown fibre mineral wool is therefore

huge. In fact, the BRE has estimated it would save approximately £465m per year and 2.5 million tonnes of CO_2.

Putting that into the context of increasing fuel poverty and the government's ambitious CO_2 emission reduction targets and the importance of such a measure being included in RdSAP becomes clear.

According to a recent report from Cambridge Econometrics, millions of people are living in fuel poverty in the UK; and one of the biggest causes is the poor condition of our housing stock, which is one of the least energy efficient in Western Europe.

The report undertook detailed modelling to assess the economic, fiscal and environmental impact of a recommended investment programme aimed at bringing homes up to Band C on an Energy Performance Certificate. Included within the recommendations is a national super-insulation scheme that would result in £8.5bn annual energy bill savings for British households.

In addition to making all low income households highly energy efficient and reducing the level of fuel poverty, it also demonstrates the comprehensive economic benefits of taking radical action to fix Britain's energy wasting homes. Overall, it is estimated that a radical programme to make all homes highly energy efficient would add £13.9bn annually to the UK economy by 2030, with the government receiving £3.20 through increased GDP for every pound they invest.

With the UK's existing housing stock posing the greatest barrier to us achieving ambitious CO_2 reduction targets and over 5,000 people a year dying from cold housing, recognising those measures that can make a significant contribution to improving the energy efficiency of our housing stock – such as insulating existing party wall cavities – is crucial. And as per the Cambridge Econometrics report, tackling these measures has an economic benefit too. ■

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Improve the acoustic performance of party walls:

Stick to specification

The specification process forms the backbone of the construction industry. For developers, architects and building control it offers a way to control performance and regulate the built environment for end users, as well as providing an accurate brief to installers. Tom Foster, senior product manager at Saint-Gobain Isover, looks at potential issues around sticking to specification, the process itself and the role all parties have in ensuring acoustic performance in buildings.

For contractors and subcontractors, specifications provide a safety net. If specification is followed, a building will meet the acoustic performance requirements it was designed for, but problems can arise if substitute materials are used or a detail is constructed incorrectly. An example where specification is key is in party walls, where acoustic performance 5db above building regulations requirements is often needed. In this area specifically, Robust Details has become very popular because it provides pre-approved details and specifications.

Robust Details

The Robust Details Scheme is an alternative to pre-completion sound testing and offers a way for contractors to demonstrate the compliance of party walls or floors with acoustic building regulation standards. In order to be approved, each Robust Detail must be capable of consistently exceeding acoustic regulation standards, be practical to build on site, and be reasonably tolerant to workmanship. This ensures manufacturers develop systems that are consistently achievable on-site.

Robust Details offer numerous constructions to demonstrate compliance, all of which have thorough design and installation details, as well as specific product requirements. In the case of masonry party walls, products such as Type A wall ties, 10 kg/m^3 plasterboard and Isover's RD Party Wall Roll insulation are all specifically required to provide high levels of acoustics. Moving away from any of these products may impact the acoustic performance of the structure.

Consequences

Moving away from specification can put system performance levels at risk. Failing to follow spec can reduce the acoustic 'efficiency' of a building, meaning that it does not meet target performance levels. This can also impact on important goals under schemes such as Code for Sustainable Homes (CfSH), and most importantly does not provide the end user with a dwelling that performs to the level it should. This could mean, in the arena of acoustics, a noisy house that is uncomfortable for inhabitants.

Not sticking to specification can also cost housebuilders and developers large amounts of money. Control bodies will ask for installation errors to be corrected, so the initial savings made by compromising the specification during the installation stage will be lost when having to rectify constructions.

Failure to use specified products can also result in long term issues. In the case of party walls, homeowners will not receive the standard of property that they are paying for, potentially damaging a housebuilder's reputation.

Conclusion

Manufacturers, specifiers and contractors all have a role to play in improving specification compliance and the performance of buildings in situ. Manufacturers should ensure their newly developed systems are practical and tolerant to workmanship and support the industry at design and build stages. However, specifiers and contractors also play a pivotal role in ensuring specified products and systems are used and constructed correctly on site.

If all parties play their part, we can improve the in situ performance of our buildings to the benefit of the end user and the construction industry as a whole.

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www.isover.co.uk

The ‘Sound’ Choice for Party Walls

Isover RD Party Wall Roll is a proprietary component of three Robust Details; E-WM-17, E-WM-20 and E-WM-24.

- Helps to deliver a zero U-value party wall
- 3 credits towards the Code for Sustainable Homes
- No requirement for render or parge-coat

Visit www.isover.co.uk for more information

ISOVER
SAINT-GOBAIN

For low energy office buildings, keep it simple

The design, construction and operation of low energy buildings should favour a simple 'fabric first' approach wherever possible writes Tom De Saulles, building physicist at The Concrete Centre...

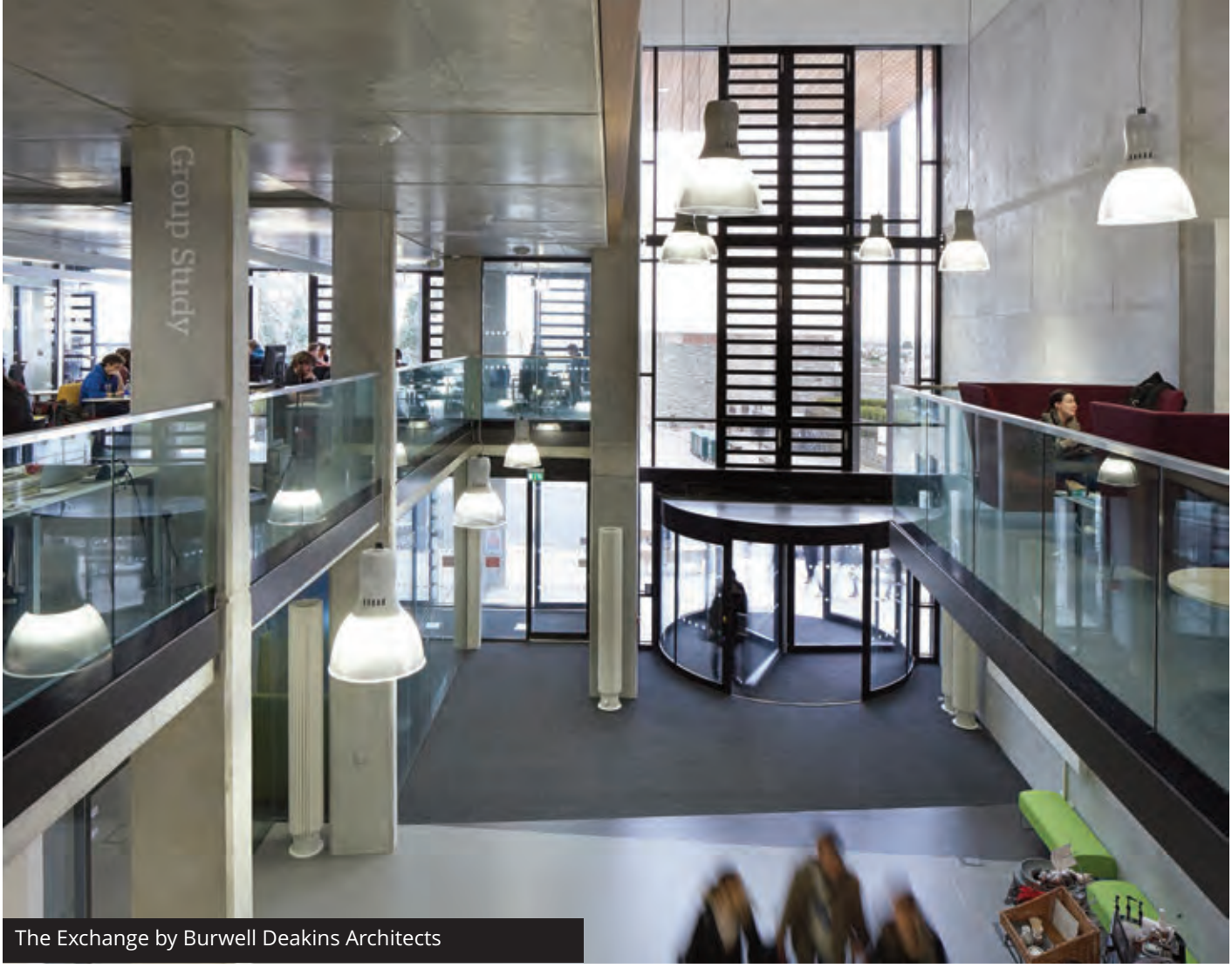
For effective long-term sustainability you need to get the fundamentals of building design right. Increasingly, architects and their clients are returning to fundamental passive design principles that allow fabric performance to be fully optimised. This integrates the thermal mass of exposed structural elements with the design of glazing, ventilation, shading and mechanical systems. This helps ensure comfortable conditions can be maintained during spring and summer, whilst avoiding or minimising the need for mechanical cooling.

In practice, thermal mass is typically provided by heavy-weight floors synonymous with concrete frame buildings. Lightweight timber construction and typical steel frame buildings cannot match the performance provided by concrete floors, which can be constructed with an exposed soffit to fully access its inherent thermal mass. The large surface area of the soffit absorbs unwanted heat, helping regulate the internal temperature and peak cooling demand. Using concrete floor slabs in this way makes good sense, as they typically provide by far the greatest source of thermal mass in non-residential buildings and can readily absorb heat during the day and release it at night with the aid of night-time ventilation.

A question often asked by architects and designers is 'how much concrete do you need to provide thermal mass?' The answer largely depends on the extent to which you want to optimise the building design. It is sometimes thought that 100mm of concrete is sufficient, but this fails to take account of a range of factors including how buildings actually respond to real weather conditions. For example, a naturally ventilated office with exposed 100mm composite floors (steel decking/soffit with in-situ concrete topping) should have sufficient heat capacity to cope with a simple 24 hour heating and cooling cycle. However, in addition to a building's daily cycle, there are also longer cycles related to a typical hot spell (usually three to five days) and also the five working days per week cycle, from which heat will reach different depths within the available thermal mass.

In the case of floors in a non-air conditioned building for example, the greater the slab depth, the longer the time period it responds to; the core of a 300mm thick concrete slab responds to the monthly average condition and draws heat in deeper over an extended period of hot weather. For longer time periods these factors are important because it is the longer-term average room temperatures that define the thermal storage core temperature and hence the temperature gradient that draws heat in. So, whilst a 100mm of concrete offers some element of thermal mass, the thicker slabs used in concrete frame buildings provide greater temperature stability and increased cooling performance across a range of conditions, including hot periods.

In terms of embodied CO_2, research shows there is little difference between concrete and steel frame office buildings. Perhaps of more relevance, is the operational CO_2 savings provided by thermal mass, through its ability to avoid or minimise the need for air conditioning. Over a 20 year period the savings achieved can account for around 75% of the initial embodied CO_2 of the concrete, or in other terms, the whole life CO_2 performance of a concrete frame office building is a tiny fraction of its initial embodied CO_2 when the thermal mass is exploited.



The Exchange by Burwell Deakins Architects

When another factor known as carbonation (the absorption of CO_2 by concrete) is factored in, along with a slightly longer life span, the initial embodied CO_2 of the concrete can be fully offset. As this demonstrates, it is always more useful to view concrete buildings in whole life terms.

So there you have it, the simplest approach in office design, which utilises thermal mass can significantly reduce energy consumption, help maintain comfortable conditions and deliver impressive whole life CO_2 performance. ■

Related Information:

Publication: Utilisation of Thermal Mass in Non Residential Buildings
http://www.concretecentre.com/online_services/publication_library/publication_details.aspx?PublicationId=786

Publication: Concrete Floor Solutions for Passive and Active Cooling
http://www.concretecentre.com/online_services/publication_library/publication_details.aspx?PublicationId=797

Publication: Thermal Mass Explained (2012 update)
http://www.concretecentre.com/online_services/publication_library/publication_details.aspx?PublicationId=781

The Concrete Centre will be exhibiting as part of the Concrete and Masonry Pavillion at Ecobuild – 3-5th March 2015, ExCel, London. North Arena.

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Full Fill for the perfect fit

How fully filling with a mineral wool insulation can be the most practical and cost effective solution

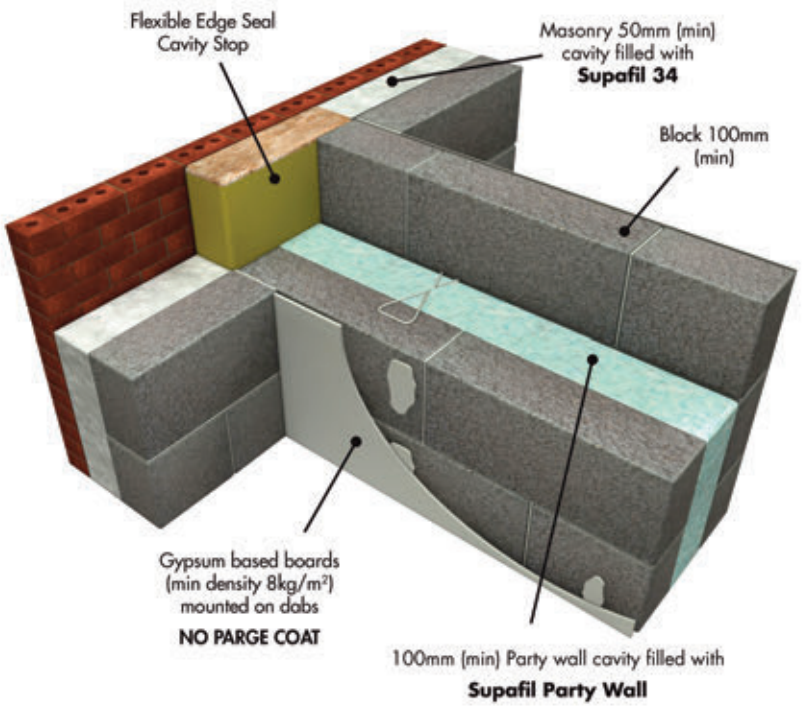
When it comes to installing any form of insulation, the performance characteristics of a product must always be considered. Indeed, when approaching a masonry cavity wall application, the fire and thermal performance of the insulation, in addition to the prevention of water penetration are vital issues that must be addressed – the selection of appropriate materials and jointing methods for the outer leaf are therefore crucial.

Alongside these factors, another key consideration can be cost. Fundamentally, housebuilders and developers require high performing products that can save them time and money. With this in mind, there is a solution that ticks every box. The recommended masonry cavity wall solution is full-fill mineral wool insulation, either injected (such as Supafil) or built in slabs (such as Earthwool DriTherm Cavity Slabs).

These systems not only provide U-values that comply with Building Regulations, but they are also the lowest in cost. Even with dense concrete blocks it is possible to achieve very high thermal performance in a manageable wall width; and a full-fill solution is suitable for all types of buildings.

Full-fill solutions are the most commonly used in the market with approximately 55% of new build cavity walls incorporating them, and 85% of all residential cavity walls when including refurbishment.[1]

Housebuilders using full-fill solutions will make significant savings, whilst still achieving the thermal performance required to meet compliance with Building Regulations. In fact, compared to partial fill solutions, specifiers can save up to 50 per cent of the cost, which can equate to up to £535 per plot – a substantial cost saving for housebuilders when they are building multiple plots.



Meanwhile, mineral wool insulation products are non-combustible and classified as Euro-class A1 to BS EN ISO 13501-1 – the highest possible "Reaction to Fire" classification – compared to a D or E typically achieved by foam plastic insulation materials.

Furthermore, there is a common misconception that water can bridge the cavity and a full-fill solution cannot be used in severe exposure zones. In reality, there are mineral wool insulation products available on the market that contain a water-repellent silicone additive to ensure that no liquid water is able to pass through and reach the inner leaf of masonry. Specifiers should only choose those products that are BBA certified for all exposure zones – even when a site is being insured by the NHBC[2].

Undeniably, a full-fill mineral wool insulation to cavity walls offers the most practical, high performing and cost effective solution. This all helps in contributing to keeping properties warmer and for the homeowner, saving money on their energy bills in the long run.

For more information please visit www.knaufinsulation.co.uk

[1] Building Insulation Market,Construction Markets 2011

[2] Consult NHBC Standards for guidance regarding wall construction in each exposure zone

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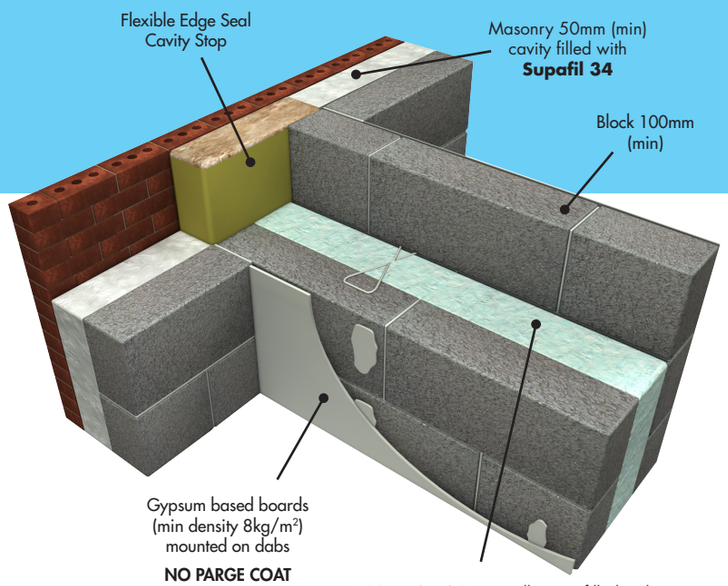
The Party Wall Full Fill Blown Solution

PARTY WALL INSULATION

ROBUST DETAIL E-WM-28™



Masonry, Light weight aggregate block work, min. 100mm cavity

- E-WM-28 is the first unique Supafil party wall blown wool Robust Detail solution
- Contributes to a zero effective U-value when compiling SAP calculations
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Polyurethane foam – a thermal solution

Leonie Onslow, Executive Director at the British Urethane Foam Contractors Association asks if it is possible to meet zero carbon requirements and how existing housing will fare...

Now that Building Regulations are firmly set to result in zero carbon emissions for new build housing by 2016 and for non-domestic buildings by 2019, this is really going to cause upheaval. How can these stringent standards be met and how can existing housing be brought up to similar standards?

The British Urethane Foam Contractors Association (BUFCA) advocates the use of sprayed or injected polyurethane foam. This can help meet current and future Building Regulations with superior insulation performance, air tightness, condensation control capabilities, and can also reduce carbon emissions. The application of polyurethane foam helps seal a building, providing a barrier to the ingress of airborne sound.

BUFCA is the national trade association representing the spray applied and injected polyurethane foam industry. The association has specialist installers who are expert in the installation of PU foam in a wide variety of applications. Material and equipment suppliers are also part of BUFCA.

Polyurethane foam can be installed to meet Building Regulations as wall insulation, roof insulation, floor insulation, or to fill voids and other areas providing a seamless, thermal insulation barrier. Other jointed systems give rise to a potentially weak point, leading to a significant loss of insulation value.

Existing buildings can also be brought up to high standards of thermal efficiency resulting in the lowering of fuel bills and a reduction in carbon emissions. The use of a high performance spray applied or injected polyurethane foam can substantially increase thermal performance.

There are still millions of existing homes with uninsulated cavity walls which could be brought up to high standards easily and effectively with injected

polyurethane foam. The use of a high performance spray applied or injected polyurethane foam is often the most cost effective solution for cavities, including hard-to-treat housing.

These could be properties with narrow cavities, stone cavities, failing wall ties, or a metal frame or timber framed construction. Injected polyurethane foam systems bring these buildings up to much higher standards of energy efficiency. The insulation acts as a bond between the inner and outer leaves providing structural stability to the property.

The two-component liquid system produces a highly-efficient blanket of insulation with a thermal conductivity approximately twice as efficient as fibreglass. It is particularly cost-effective and easy to apply to a wide variety of substrates. Its closed-cell nature renders it very resistant to moisture ingress and grades are available which achieve both Class 1 and Class 0 fire ratings when tested to BS 476 Part 7 and 6 respectively. The urethane foam can be applied in any thickness to suit the insulation requirements of the building.

Spray-applied foam can be used to insulate and stabilise roofs (for instance in cases of nail fatigue), or as an energy efficient alternative to re-roofing. It has been used to stabilise pitched roofs in under-tile applications for over 40 years. Spray applied foam used in lofts meets Class 1 Surface Spread of Flame when tested to BS 476: Part 7 and with the addition of a specialist coating, can achieve Class 0. Air leakage can be reduced down to zero with in-situ applied polyurethanes.

Where polyurethane foam insulation is applied to an existing roof, this is subject to a site survey as the roof needs to be structurally sound prior to installation. A BUFCA installer will ensure that a survey is carried out and any remedial work is done before the installation of polyurethane foam.

Polyurethane foams are also resistant to flooding, and are therefore normally preferable over other materials which may have decreased insulation values once they are wet. These systems are approved under BBA certification for masonry cavity wall constructions in all exposure zones.

The objectives of BUFCA are to ensure that high standards are set and maintained within the industry, that installers coming into the industry are properly trained and monitored, and that installers adhere to the association's Code of Professional Practice. Installers are expected to maintain high standards of quality and service to protect the industry's credibility.

There is a twenty-five year insurance warranty which BUFCA installer members can offer for domestic and commercial injected polyurethane cavity wall insulation projects. The warranty offers reassurance to customers and becomes effective if there is a fault with the installation and the installer has ceased to trade or cannot honour the guarantee.

A series of technical datasheets are available at www.bufca.co.uk to help specifiers meet current Building Regulations, along with further information, or a brochure and list of installers. ■

BUFCA
BRITISH URETHANE FOAM CONTRACTORS ASSOCIATION

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A Sustainable Future Begins With Retrofit

It is estimated that 22 million houses in the UK need to be thermally upgraded in order to achieve a worthwhile level of energy saving, with 8.5 million homes over 60 years old and considered hard to treat. But how are we tackling this and how has the past 12 months shaped up to meeting the UK's long-term targets? Mark Weaver, Project Director for Retrofit for Saint-Gobain in the UK, explains the importance of retrofitting to reduce the energy consumption of the UK's older, inefficient housing stock.

It is recognised that the UK has probably the oldest and least energy efficient housing stock in the western world. Residents in such properties feel the effects of this in the form of high energy bills, leading to unacceptable levels of fuel poverty. In order meet the UK's 2050 CO_2 commitments, the existing housing stock needs to be a high priority amongst Government policies.

Upgrading the thermal performance of the building envelope will reduce the energy required to maintain a comfortable environment. Insulation solutions and low emissive glazing are solutions at the core of Saint-Gobain's construction products sector. They can tackle all house types and elements of the building – walls, floors, roofs, windows and doors. Individually, treating these areas of the house can offer significant energy and savings on bills.

However, as demonstrated by Saint-Gobain's unique Energy House project, carried out in conjunction with leading academics from Leeds Metropolitan University, the University of Salford and Saint-Gobain Recherche, taking a whole-house fabric first approach to retrofitting a house can prove hugely beneficial for thermal improvement, air tightness and comfort for the habitants of the building.

During the three-month project, we identified that, with the installation of multiple measures, energy savings of up to

63% can be easily achieved, especially on poor performing properties, with a 50% reduction in unwanted air leakage.

Representing 21% of the UK's hard-to-treat housing stock, the Energy House is a full-scale typical 1919 end-of-terrace house. Built in an environmentally controlled chamber, tests can be accurately monitored, varied and repeated while maintaining exactly the same conditions – something that most whole-house testing cannot achieve when done outdoors.

There has, and continues to be, much publicity about energy efficiency in the domestic retrofit sector in both the industry and national press. Much of it started late last year with the political debate around so-called 'green levies'. This ultimately led to significant changes and the dilution of the original Energy Company Obligation (ECO), and, most recently, the sudden closure of the Green Deal Home Improvement Fund (GDHIF). The GDHIF initiative offered up to £7,600 for home improvements such as solid wall insulation, cavity and loft insulation and heating measures. This series of events has resulted in an increased number of energy efficiency schemes being operated, but industry is reporting that fewer installations are actually being carried out.

I'm confident that things will improve, but 2014 is unfortunately shaping up to be a year of missed opportunities for the market. Perhaps this illustrates the need for more structural fiscal incentives such as discounts from council tax rates for homeowners installing energy efficiency products in their homes. Saint-Gobain is supportive of such measures to create sustainable growth in this sector.

However, we need to look to the positive elements and celebrate the retrofit projects that are happening across the country, many of which Saint-Gobain businesses such as Weber, Isover and Celotex are supplying to. These include social housing projects still funded by the smaller and newly defined ECO, the Green Homes initiative in Scotland, where interest has been high, the 24 Green Deal Communities schemes for street-wide solid wall insulation and the one-off homeowner retrofits through the first wave of GDHIF vouchers. We are beginning to see genuine 'blending' of finance streams to deliver affordable retrofit for public and private properties – exactly how the Green Deal structure was envisaged. These are encouraging examples; we'd like to see the volumes reach a healthy level for industry investment, alongside a consistent policy framework for greater industry confidence.

In the meantime, Saint-Gobain will continue to develop retrofit solutions to meet the needs of the existing housing stock, and train and educate installers and contractors through the nationwide network of Saint-Gobain Technical Academies, leading the industry in providing a competent workforce to tackle the significant retrofit challenge.

SAINT-GOBAIN

The Party Wall compensation trap

Chairman of the Faculty of Party Wall Surveyors (FPWS), Alex Frame, provides advice regarding underpinning and a compensation trap to avoid...

I have always advocated and taught faculty members not to agree to underpin an Adjoining Owner's property. My reasoning being, particularly with regards to partial underpinning, that problems will occur resulting from the work as differential movement will almost certainly occur.

Claims will therefore abound, and therefore wherever possible I would say to reject any scheme that shows underpinning or such works to an Adjoining Owner's property, and request that the Building Owner reconsiders his scheme and details a design that will not involve the Adjoining Owner's property.

I now have another reason to reject such a scheme, which will protect the Building Owner from having to provide compensation in accordance with s7(2) of the Act which states:

The building owner SHALL compensate any adjoining owner and any adjoining occupier for any LOSS or damage which may result to any of them by reason of any work executed in pursuance of the Act.

The capital emphasis is mine simply because it is a must and not a maybe and covers loss as well as damage.

Continued on page 203...

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You do not need to appoint an "adjoining owners surveyor" until such time as you receive the party wall notice from the building owner (the person having the work carried out). If you are unsure call us.

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For more information see our article about how the Party Wall Act affects building work in the next issue.

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- Demolishing, increasing or lower the height of a party wall or rebuilding a defective party wall or chimney stack;
- Cutting pockets into or inserting steel beams into a party wall;
- Building up against the wall of a neighbouring property that requires works to the foundations or roof/eaves details;
- Undertaking excavations of any type adjacent to or below the foundations of any adjoining structure;
- Undertaking Piling works or the installation of rock anchors.

If so, you will need the services of a party wall surveyor. We can advise you whether you have to comply with the requirements of the Party Wall etc. Act 1996 and explain all the liabilities and the workings of the Act.

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Continued from page 200...

I have a case in mind whereby the Building Owner (Developer) designed a scheme that abutted the Adjoining Owner's property and undertook to underpin in accordance with s6(3) which states:

The building owner may, and if required by the adjoining owner shall, at his own expense underpin or otherwise strengthen or safeguard the foundations of the building or structure of the adjoining owner so far as may be necessary.

"I would say to reject any scheme that shows underpinning or such works to an Adjoining Owner's property, and request that the Building Owner reconsiders his scheme and details a design that will not involve the Adjoining Owner's property."

Notices were properly served, surveyors properly appointed and an Award properly made and served. The work was carried out and no damage was caused – everyone was happy. However, the Adjoining Owner rightly informed his insurers that his house had been underpinned to which the reply was that his premium doubled and with no logical explanation. One would think that an underpinned house was at less of a risk from subsidence than one which had not been done.

The Adjoining Owner tried other insurers and found the same answer – a higher premium. The Adjoining Owner had therefore no alternative but to make a claim against the Building Owner under s7(2) as he had suffered LOSS as a result of the Building Owner's work. The Building Owner has now to pay the difference, which in this particular case only amounts to a few hundred pounds.

The sting also comes in that all future premiums are going to be higher and will affect the successors in title of the property. How is this going to be calculated is difficult to say, other than some kind of offer of a calculated figure covering the next six years, which is the limit of a claimable period.

If however, s6(3) is invoked by the Adjoining Owner, it could be argued by the Building Owner that he will not be responsible for any insurance premium increase given that he has brought it to his attention and the work is not necessary.

Nevertheless, as I say and advise, do not undertake any work to an Adjoining Owner's property, or at least not without making the Building Owner aware of possible claims against him. This also comes within your duty of care to give the correct advice to ensure that you are not exposed yourself as being the expert. ■

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Damage and the Party Wall Act

When damage is done through party wall building activities, the Party Wall Act can sometimes not cover the issue. Sara Burr, Chair of The Pyramus and Thisbe Club explains...

Surveyors only need to get involved in a disagreement by agreeing the extent of damage and remedial repairs and who is going to pay for what, if owners cannot agree it between them. Adjoining owners don't have to agree to have the building owner's contractor have put right the damage – they can agree compensation in lieu of making good. Ultimately, whilst it is the contractor that has caused the damage, it is ultimately the building owner or insurers that have to pick up the bill. Unless a retention is held and the contractor can be brought to task.

Damage as a result of building work next door is not always covered under the Act, much to the dismay of adjoining owners.

Vibration, roof leaks causing damp, removal of plaster, debris falling off a scaffold to name but a few can cause damage but may not be the result of notifiable works. If it's not, then the building owner has no obligation to put the damage right and the adjoining owner is then looking at an insurance claim. Unfortunately in many situations the adjoining owner doesn't want to have to claim on their insurance because the building owner's contractor has been careless. Owners need to remember that when the contractor has left, life resumes with them being neighbours.

Cutting up a concrete slab using a cango can be fine, as long as it's not connected to the party wall. Diamond cutting the connection first might increase the cost but it significantly reduces the likelihood of damage. The work itself will be notifiable if it is connected to the party wall and so there is no right under the Act to cause damage. If it's not connected and no work is notifiable under the Act then the adjoining owners would have to claim on their insurance and then insurance companies will battle it out.

Plaster removal

This depends on the type of plaster and how it is intended to be removed. Some old plaster can be brittle, very thick, and contain horse hair. Under normal circumstances that wouldn't be a problem to remove and normally wouldn't be notifiable, although there are conflicting court cases on that. Any damage would depend on the tools the contractor is going to use and the likelihood that they could cause damage.

Dormer constructions

The notifiable works relating to these are normally cutting into the party wall for padstones to support steel beams and cutting in for flashings with the front slope staying intact. So what happens if the contractor strips the roof, leaving the felt and battens so the party wall isn't exposed? It isn't notifiable, but he causes damage when the gutter is off and water ingress affects the adjoining owner's property and a damp problem arises. Or the contractor puts up scaffolding to form the dormer at that rear and debris falls off and damages the adjoining owner's roof. Neither were caused by notifiable works so if the building owner decides he is not going to put right the damage then it's a common law claim for damages via insurers. ■

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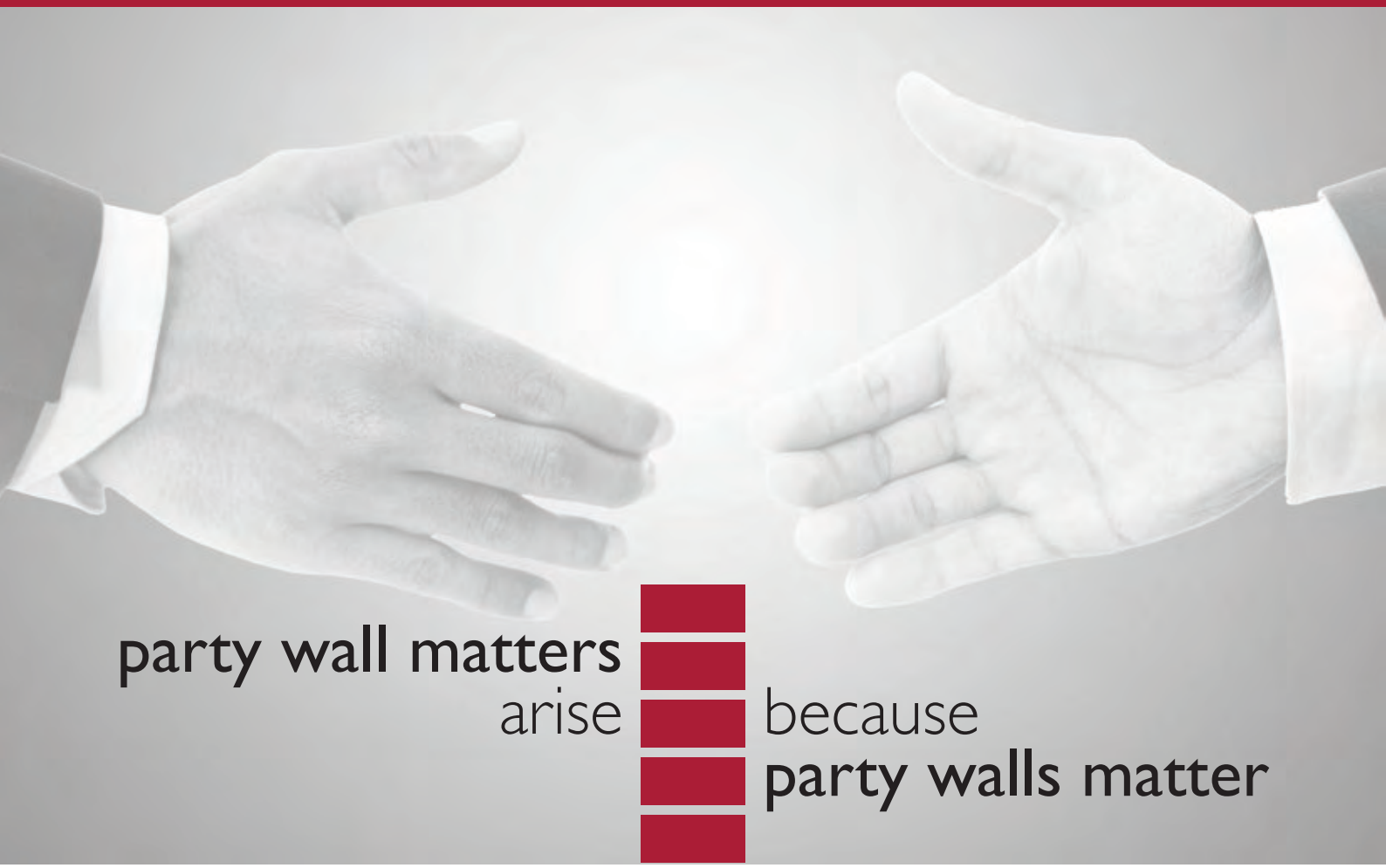

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A new construction for the CDM Regulations

Amber Strickland, Associate at Wragge Lawrence Graham & Co LLP considers some of the key changes to the new CDM Regulations 2015...

Serious and fatal injuries to workers in construction, though much improved since the introduction of the Construction (Design and Management) Regulations (CDM Regulations) in 1994, remain a concern. According to the 2013/14 HSE Statistics, construction accounts for 5% of Britain's employees but for 31% of fatal injuries to employees and 10% of reported major/specified injuries.

Following consultation on the current CDM Regulations (2007) in June 2014, revised CDM Regulations are expected to be implemented on 6 April 2015 (the CDM Regulations 2015). In January 2015, the HSE published draft guidance on the CDM Regulations 2015 (http://www.hse.gov.uk/pubns/priced/draft-l153.pdf) to help anyone with duties under the Regulations prepare in advance. The impetus for further change stems from a recommendation in Professor Löfstedt's report (Reclaiming Health and Safety For All: An Independent Review of Health and Safety Legislation) that regulations should aid clarity and reduce bureaucracy. The new CDM also need to implement the Temporary or Mobile Construction Sites Directive.

This article considers some of the key changes to help you future-proof your projects in-line with the changes proposed in the published draft guidance on the CDM Regulations 2015.

The CDM Co-ordinator role

The CDM Co-ordinator role will be replaced with that of the 'Principal Designer' which will include an element of influence over design. The discharge of this function will sit within the project team rather than be outsourced.

Employers will need to consider whether the Principal Designer can provide advice without any potential conflict of interest and discharge the pre-construction co-ordination function without recourse to third party advice in respect of issues outside their normal design role. If not, the cost will be borne by the Client and will need to be considered at the outset.

The transitional provisions in the draft CDM Regulations 2015 provide that CDM Co-ordinators may continue working on a project until the earlier of six months from when the CDM Regulations 2015 come into force or the end of the existing project.

"The competency requirements as drafted will provide a level of clarity and ensure that the industry is able to assess whether construction teams have what is needed to maintain health and safety standards."

Practically, for new projects where a CDM Co-ordinator is appointed, the contract should contain terms that deal with termination when the law changes. For existing projects, notice periods in CDM Co-ordinators' contracts should be checked and employment advice taken to ensure effective termination if required. According to the draft CDM Regulations 2015, the longstop date by which a principal designer must be appointed is 6 October 2015.

Guidance

The HSE intends to replace the current Approved Code of Practice (ACOP) with a set of industry guidance targeted at the five dutyholders under CDM Regulations 2015 and one for workers. The guidance is

aimed principally at smaller projects which statistically have a higher risk of serious injury and death occurring.

The legal status of the ACOP will be revoked when the CDM Regulations 2015 come into force and the new guidance will not have legal status in the same way. However, the draft guidance is practical and helpful in that it is specifically targeted at each duty holder to ensure that they understand their role in preventing injury and ill-health during the construction process.

The notification requirement

The CDM Regulations 2015 will change the current notification of projects requirements to those expected to last 'more than 30 days and engage more than 20 workers simultaneously'.

Accident statistics support the HSE's assertion that small and medium sized projects are responsible for the majority of deaths and accidents in the industry. Given the proposed changes this change seems strange as it may mean that there will be less hands-on involvement of the HSE on the sites deemed most at risk.

The explicit 'competence' requirement

Initially, the existing detailed competence requirements were to be replaced with a more general framework, based on information, instruction, training and supervision.

Following consultation, the HSE has amended its approach and the draft CDM Regulations 2015 now refer specifically to the basis of 'competence' which requires the necessary "skills, knowledge and experience." Organisational capability will be required in respect of organisations.

While there is advantage in having scope for interpretation within a set of regulations, in respect of health and safety, certainty of obligations and compliance is preferred. The competency requirements as drafted will provide a level of clarity and ensure that the industry is able to assess whether construction teams have what is needed to maintain health and safety standards.

Employers on all sites should ensure that all work is scoped and risk assessed, sub-contractors are appointed for their level of skill and experience, that all work on site is coordinated rather than each job in hand being looked at in isolation, and that operatives work within their skill base and are supervised. Employers should also be aware that, if the construction project is not notifiable at first, there may be subsequent changes in scope so that it fits the criteria for notification.

The proposed changes are subject to ministerial and Parliamentary scrutiny which could lead to further amendments or delay to their introduction. If the CDM Regulations 2015 are introduced in April 2015, the construction industry will need to ensure continued compliance to avoid risk of prosecution.

Risk assessments, permits to work, and safe systems of work will remain vital tools to ensure safety on all sites.

This article may contain information of general interest about current legal issues, but does not give legal advice. ■

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CDM2015 – a new era of construction health and safety?

James Ritchie of The Association for Project Safety highlights some potential issues arising from the new CDM Regulations regarding the client's duties to ensure proper health and safety in construction projects...

By the time you read this, the Health and Safety Executive will have published their final draft of the proposed Construction (Design & Management) Regulations 2015. The changes to the CDM Regulations are aimed at revolutionising the way construction risk management is handled at the pre-construction stage and the new regulations are scheduled to come into force on 6th April 2015.

The word 'revolution' suggests a fundamental change in organisational structure that takes place in a relatively short period of time. With a transitional period of only six months it will be a swift re-structuring for many in the industry who are used to construction projects lasting, sometimes, many years. Whilst the proposed changes might induce uncertainty for some people, and panic for others, removal of the CDM coordinator by October 2015 and the placing of CDMC duties on other project team members hopefully will not mean chaos. It is important to realise that the construction industry already has people suitably equipped to manage the pre-construction health and safety process at every level of a project. For many clients that will mean appointing a designer who has experience of CDM coordination, to undertake the new Principal Designer (PD) role. Alternatively, some large clients who have in-house designers may decide to take on the PD role themselves, possibly with advice and assistance from a suitably capable CDM Adviser.

With many more health and safety responsibilities being placed on clients, but no requirement for clients to have any health and safety knowledge or experience, one of the key issues that will need addressing is the way that they receive advice and assistance with discharging their duties. For domestic projects this will not be a problem as the HSE propose to shift all of the client's responsibilities onto the contractor, even though the contractor may not be appointed until the project has been designed and planning and building regulation permissions obtained.

With less experienced commercial clients, much heavier reliance will be placed upon the new PD appointment to ensure that the right information is available, although no explicit requirement exists for the PD to provide advice and assistance to clients. This then poses the question "Do clients just want someone to do the basic legal requirements of the PD role, or do they actually want someone who can give clients the advice and assistance required to help them avoid breaking the law?"

According to the letter of the new regulations, the CDMC's duties to advise and assist have been scrapped and the PD just has to ensure that 'assistance is provided to the client in the preparation of the pre-construction information'. The definition of pre-construction information has been expanded to include the planning and management of the project, but it is not clear whether the assistance has to be provided by the PD, or whether the PD just has to ensure that the client has got that assistance, possibly through an external appointment. Ah, the problems of whittling down regulations to try and make them more concise – results of the government's 'better regulation' initiative!

The new client's duties under CDM2015 mean that they must provide the following to every designer they appoint and every contractor they appoint

"information in the client's possession or which is reasonably obtainable, which is relevant to the work and is of an appropriate level of detail and proportionate to the risks involved, including information about:

(a) the project;

(b) planning and management of the project;

(c) health and safety hazards, including design and construction hazards and how they will be addressed; and

(d) information in any existing health and safety file."

I think most people would agree that this wording is pretty all encompassing. How many clients will be capable of providing this information without advice and assistance from an experienced construction health and safety risk management specialist? How long before clients find a 'Fee for Intervention' invoice landing on their desk for failure to provide sufficient pre-construction information?

The recent prosecution of a firm of North East architects for their failure to give contractors relevant information about the flammability of a timber frame they were erecting on a nursing home, despite that the fact that no accident had occurred, suggests perhaps that the HSE might be considering pre-emptive strikes on designers and clients. If this is the case, then clearly design teams and clients need to either be suitably capable in terms of construction health and safety risks, or they need to be adequately advised by a specialist who is capable. Design firms may consider employing CDM Advisers in the same way that they appoint acousticians, fire engineers, access consultants and other specialists.

The HSE have given the industry six months in which to terminate existing CDM coordinator contracts. Those CDMCs who have term contracts in place, or long-duration projects, need therefore to immediately commence negotiations with their clients regarding how their commissions are to be brought to a close and the Principal Designer appointed for future projects and those that will run beyond October 2015. Likely difficulties encountered will include how to agree at what point in the project the CDMC's work is terminated, how the PD takes over the Health and Safety File preparation halfway through a project, what happens to pre-construction information management during the design phase, the effect of termination on collateral warranties, and implications for professional indemnity insurance for both the exiting CDMC and the new PD should they not be the same firm. All of these issues seem not to have been of any relevance to the HSE when drafting their new regulations and imposing such a short transitional period.

The good news is that a large number of existing CDM coordinators will be capable of undertaking the PD role, provided that the client makes them the designer in control of the pre-construction phase and appoints them in writing. ■

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www.aps.org.uk

Call: 01889 577701

CALLSAFE SERVICES LIMITED

Q. Are you sure that you understand the duties and requirements of CDM2015 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**
Callsafe Services Limited. Yardley House, 11 Horsefair, Rugeley, Staffordshire. WS15 2EJ
Email: enquiries@callsafe-services.co.uk Web: www.callsafe-services.co.uk

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CDM
(CONSTRUCTION DESIGN MANAGEMENT)

Everyone involved in the construction industry have their part to play in looking after safety, wellbeing and improving the industry's health and safety record.

The Construction Design Management Regulations (CDM) are designed to help:

- monitor & improve health and safety.
- management of resource and risk without unnecessary bureaucracy.
- focus on effective planning and management throughout the entire project lifecycle.

Ensuring that working conditions are appropriately safe before work begins, and the proposed work is not going to put others at risk requires planning and organisation.

4Projects offer a range of solutions to make it easier for project team members to work within CDM requirements.

Features

- **Design Change Management -** helps projects teams to control design change management, making it much easier to manage distribution, review, query and instruction processes

- **Package Management** – allows project teams to easily create and manage work package structures to reflect the dynamic nature of individual projects or work streams. Packages can be easily created, updated and distributed

- **Information Required & Design Deliverables Schedules** – create schedules that identify when key project documentation or milestones must be completed. Track planned, forecast and actual dates of information delivery so that problems can be identified in advance

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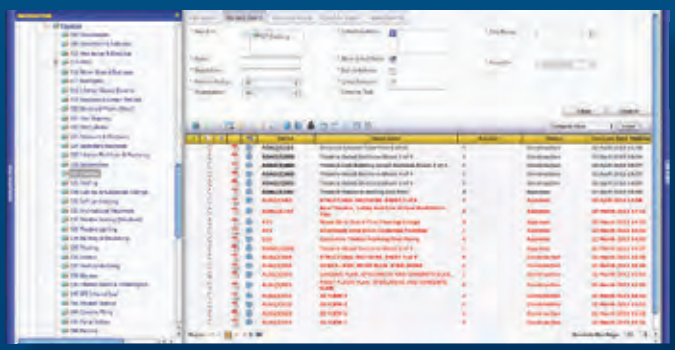
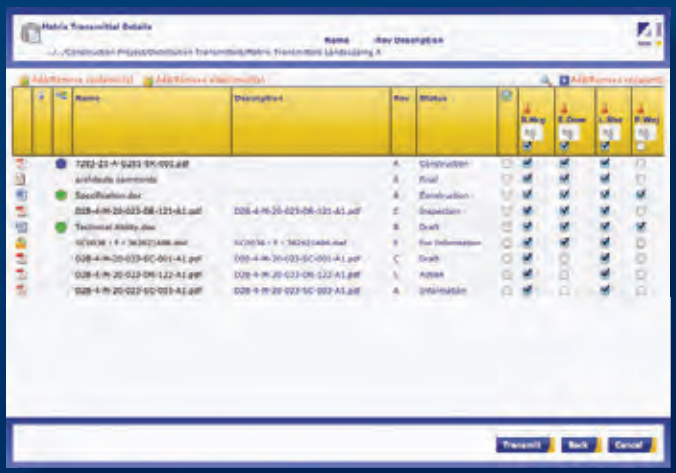
- **Health & Safety File** - makes it easy to assemble, distribute and maintain key information and documentation required for the health and safety file

- **Archiving** – removes the challenge of having to maintain access to key information at the end of a project for liability or contractual requirements. Online or offline archive solutions are available



4Projects makes it simple to gather the information required to compile Health & Safety and O&M files.



Documents can be effortlessly distributed and the relevant project team members notified.

4Projects

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CDM Key Features

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Health and safety training provision

Over 25 years providing effective and efficient health and safety advice and training to the construction industry and others...

Callsafe Services Limited has been providing health and safety advice, assistance and training to our clients, and our clients' projects, since 1987. Our clients have included many central and local government organisations, as well as private industry clients, designers and contractors.

Consultancy

Our consultants consistently ensure effective communications on projects and within health and safety management systems, with the minimum amount of paperwork produced, continuously questioning why a document is required and whether it is any use in effective management.

Callsafe Services Limited have an enviable knowledge and experience of the Construction (Design and Management) Regulations (CDM), and have provided the duties of Planning Supervisor under CDM1994 and CDM Coordinator under CDM2007. We are now prepared to act as Principal Designer under CDM2015, to assist other organisations with these duties and to act as the Client's CDM Advisor.

Callsafe Services Limited are a Registered CDM Co-ordinator Practice with the Association for Project Safety (APS), so can demonstrate our commitment to continuous improvement of our clients' and our projects' processes. This accreditation will be transferred to Principal Designer and CDM Advisor once CDM2015 comes into force.

Training

The training provided by Callsafe Services Limited includes a focus on effective communication and management, rather than just the production of documentation.

Training provided is made as appropriate and relevant to our trainees, incorporating client procedures and processes where possible.

Accredited training is also available. Callsafe Services Limited provides courses accredited by:

- Institute of Occupational Safety and Health (IOSH)
- Chartered Institute of Environmental Health (CIEH)
- Association for Project Safety (APS)
- Safety Pass Alliance (SPA)
- Currently applying for accreditation thorough CITB-ConstructionSkills Site Safety Plus

The Construction (Design and Management) Regulations 2015 (CDM2015) Training Courses that we are currently preparing, and will be in a position to present from February 2015, are as follows:

- CDM2015 Senior Management Briefing
- CDM2015 Update
- CDM2015 Overview
- CDM2015 Client
- CDM2015 Design Phase Risk Management Co-ordination
- CDM2015 Design Risk Management
- CDM2015 Reducing Risk by Design
- CDM2015 Principal Contractor and Contractors

Our consultants/trainers are all practicing health and safety professionals working within the construction industry, and have extensive experience as health and safety advisors/officer/managers for client, designer and contractor organisations.

If you need an organisation that understands the requirements of CDM, projects, other health and safety requirements, and how these requirements can be achieved in a cost-effective way, to act as your Principal Designer, provide health and safety advice and assistance and/or provide effective training; please contact Callsafe Services Limited to discuss your requirements.

CDM2015

Construction (Design and Management Regulations 2015

Are we ready?

On 29th January 2015, CDM2015 gained parliamentary approval, and will therefore come into force on 6th April 2015. As the final version of the regulations have only just been published and the Health and Safety Executive (HSE) only issued the draft Guidances for CDM2015 on 9th January 2015; the question must be asked of all construction industry organisations, and the industry itself, are we ready?"

The regulations can be viewed and downloaded from:
http://www.legislation.gov.uk/uksi/2015/51/pdfs/uksi_20150051_en.pdf

On Friday, 9th January 2015, the HSE issued the draft text of L153 (draft), Guidance on the Construction (Design and Management) Regulations 2015, including the draft regulations, which can be downloaded from: www.hse.gov.uk/pubns/priced/draft-l153.pdf

On the same date, the guidances produced for the five duty holders under CDM, plus the workers, were published in draft. The guidances set out, in practical terms, what actions are required of them to deliver a safe and healthy construction project. These documents have been written by the Construction Industry Advisory Committee (CONIAC). These six 'Industry Guidances' are available for free download, as follows:

CDM15/1 Industry guidance for Clients
www.citb.co.uk/documents/cdm%20regs/industry-guidance-clients.pdf

CDM15/2 Industry guidance for Principal Designers
www.citb.co.uk/documents/cdm%20regs/industry-guidance-principal-designer.pdf

CDM15/3 Industry guidance for Contractors
www.citb.co.uk/documents/cdm%20regs/industry-guidance-contractors.pdf

CDM15/4 Industry guidance for Designers
www.citb.co.uk/documents/cdm%20regs/industry-guidance-designers.pdf

CDM15/5 Industry guidance for Principal Contractors
www.citb.co.uk/documents/cdm%20regs/industry-guidance-principal-contractors.pdf

CDM15/6 Industry guidance for Workers
www.citb.co.uk/documents/cdm%20regs/industry-guidance-workers.pdf

Policies and Procedures

CDM2015 will require all CDM duty holders to amend their policies and procedures to some extent.

- Clients will need to develop their arrangements for the enhanced client duties on significantly more projects.
- Those who would act as the Principal Designer (PD) will need to develop their procedures to perform these duties for all elements of design and planning, not just their design or their sub-consultants'/ sub-contractors' design, but for all design, including temporary works design performed during construction.
- Principal Contractors and Contractors will need to address the requirement for having a Construction Phase Plan on all works, and the Domestic Client duties if they work in the domestic client sector.
- Designers have the least amendments to make, as their duties have minimal changes, unless they take on the Principal Designer's duties.

Training

Additional training will be required to update all of the duty holders with the amended regulations and guidances.

The summaries of the aims and objectives of the CDM2015 courses are shown below:

CDM2015 Senior Management Briefing

This 3.5 hours course is designed to provide senior management of client, project manager, principal designers, designer, principal contractor and contractor organisations with an understanding of the requirements of the CDM Regulations 2015.

Course Objectives

Upon completion of the course, delegates should:

- appreciate the need, application and framework of the CDM regulations; and
- understand the duties and responsibilities of the client, principal designer, designers, principal contractor and contractors.

CDM2015 Update

This 1 day course is designed to provide all persons involved in construction projects, including clients, project managers, principal designers, designers, principal contractors and contractors who are familiar with the requirements of CDM2007 with an appreciation of the changes necessary to comply with CDM2015.

Course Objectives

Upon completion of the course, delegates should:

- understand the changes from CDM2007 to CDM2015 CDM regulations; and
- be able to perform the necessary amendments to their organisations' arrangements.

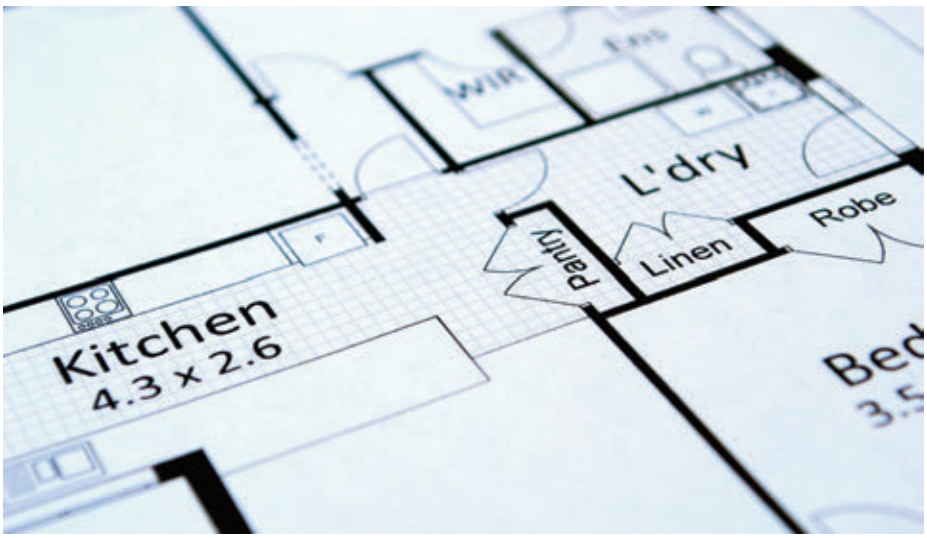
CDM2015 Overview

This 1 day course is designed to provide all persons involved in construction projects, including current and potential clients, project managers, principal designers, designers, principal contractors and contractors with a broad overview on the CDM Regulations 2015.

Course Objectives

Upon completion of the course, delegates should:

- understand the need and application of the CDM regulations;
- appreciate the framework of the regulations and the interfaces between the key parties; and
- understand the duties and responsibilities of the client, principal designer, designers, principal contractor and contractors.



CDM2015 Client

This 1 day course is designed to provide personnel who are tasked by their organisation to perform the Client's duties with a sound understanding of the Client's responsibilities & duties under the CDM regulations 2015 and what should be expected of the principal designer, designers, the principal contractor and contractors.

Course Objectives

Upon completion of the course, delegates should:

- understand the obligations placed on Clients by the CDM Regulations 2015;
- make effective management arrangements and ensure compliance;
- appreciate the information requirements; and
- understand the requirements for the Health and Safety File

CDM2015 Design Phase Risk Management Co-ordination

This 3 day course is aimed at those persons who will be performing the duties of the Principal Designer on behalf of their employer, who has been appointed to this role by the Client. It provides knowledge on the requirements, methods that could be used to achieve these requirements and the personal qualities necessary. The course also provides for the additional services that could be offered by the Principal Designer for advising and assisting the client with the Client's duties.

This course is currently being considered for accreditation by the Association for Project Safety (APS).

Course Objectives

Upon completion of the course, delegates should:

- understand the principal designer's duties under the CDM regulations 2015;
- know how to ensure effectively cooperation, coordination and communication during the design;
- be familiar and confident in the supply of information and production of evidence; and
- be able to advise and assist the client with the client's duties, if required

Pre-Course Requirements

Those who wish to undertake this course should be familiar with and have knowledge of the construction industry and construction health and safety which is deemed to include:

- an appreciation of H&S Law, Approved Codes of Practice and guidance applying to construction works;
- an understanding on how the construction industry is organised and works, including

different forms of procurement and contracts; and
- an understanding of their individual and company responsibilities under H&S Law.

CDM2015 Design Phase Risk Management Co-ordination

This 2 day course is aimed at Principal Designers and Design Risk Managers who manage the requirements of design risk and CDM2015 for Designers.

This course is currently being considered for accreditation by the Association for Project Safety (APS).

Course Objectives

Upon completion of the course, delegates should:
- understand the principal designers' duties under the CDM regulations 2015;
- know how to effectively reduce risk by design; and
- be familiar and confident in the supply of information and production of evidence.

Pre-Course Requirements

Those who wish to undertake this course should be familiar with and have knowledge of the construction industry and construction health and safety which is deemed to include:
- an appreciation of H&S Law, Approved Codes of Practice and guidance applying to construction works;
- an understanding on how the construction industry is organised and works, including different forms of procurement and contracts; and
- an understanding of their individual and company responsibilities under H&S Law.

CDM2015 Reducing Risk by Design

This 1 day course is designed to provide personnel who perform the duties of a Designer with the necessary knowledge and confidence in the

performance of the task for full compliance with the designers' duties under CDM2015.

Course Objectives

Upon completion of the course, delegates should:
- recognise the range of persons who would be considered to be designers;
- fully understand the designers' duties under the CDM regulations;
- know how to effectively reduce risks by design; and
- record the design decisions in an efficient manner.

CDM2015 Principal Contractor and Contractors

This 1 day course is designed to provide principal contractors and contractors with the management requirements of the Construction (Design and Management) Regulations 2015 (CDM2015).

Course Objectives

Upon completion of the course, delegates should:
- understand the obligations placed on all persons involved by the CDM regulations;
- understand the extent and benefits of effective risk assessments and method statements;
- know the requirements for the construction phase plan and site health and safety management; and
- appreciate what checks should be performed prior to engaging other parties and the checks to be performed during the work.

All of the courses are offered as 'in-house' courses, where the trainer presents the course at a venue provided by the delegates' employer, and are priced at a daily rate.

Publicly available courses will also be arranged for some of the courses.

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Meeting recycling and recovery challenges

NFDC CEO Howard Button, argues for the entire construction supply chain to think much more deeply about the life cycle of buildings and materials if we are to meet our recycling and recovery challenges...

The phrase "circular economy" has become a buzzword in the built environment sector, but CEO Howard Button is concerned that contractors, manufacturers and architects are not thinking deeply enough about the whole life cycle of structures.

"Buildings that are going up are rarely designed for demolition. Nobody wants to think about their demise at that stage," he says, "So every time our members go on site, they are expected to clear it completely before construction work can begin." Representing the NFDC at various meetings with UKCG contractors, he admits that his views have caused ripples within the group.

"Every demolition project is unique, but they all have one feature in common: we have to clear everything away. It's virtually impossible to reduce waste from a demolition site. The challenge is how to deal with it cleverly" he added.

"They didn't realise the seriousness of the situation. They were happy creating a building and saying that it was sustainable.

"While many buildings might be sustainable, they are not ultimately recoverable at the end of life." He would like to see more support for an End of Life building directive. This proposal has been floated in the EU in previous decades, but has never fully taken

off for construction. However, the principle is working in other sectors: 'There is an EU directive covering the automotive sector. All the components that go into a new car have to be recyclable. There's no reason why that principle couldn't be reworked for buildings." But Howard is a realist.

While he believes that the legal force of an EU Directive would be the most effective way of tackling deep flaws within the built environment life cycle, he would also welcome a voluntary sign up system from industry. "Even if we just identified the materials that were in a building, that would help. The more information we can gather, the better. " He is hoping that the increasing uptake of building information modelling (BIM) – set to become standard on Government construction projects from 2016 - will be a useful source of information for demolition contractors over the longer term.

However, the value of BIM at the end of a building's life will depend on how rigorously the data is updated, and whether it takes into account maintenance and retrofitting. NFDC is also encouraging clients to use their influence on manufacturers and suppliers.

"We've been involved with meetings with some of the major retailers. They are looking very carefully at their own estates. We're helping steer people in the right direction wherever we can." Howard believes that architects and designers should have to consider how a building could be dismantled as part of their design brief.

"We need better information on fixings. Designers should ensure that they are accessible. Standardisation of products would also help." He is particularly concerned about structural elements that contain composite materials. In earlier decades, many materials could be recovered intact for future use. Floor joists could be cut down and turned into floorboards. Steel sections could be taken back to the mill and be re-rolled into smaller and longer girders, to agreed specifications. But today, many building elements are so highly engineered that they cannot be recovered, but must be recycled instead, which is a far more energy intensive process, leading to lower grade materials. Howard gives the example of lattice beams he saw recently (two pieces of wood joined by thin metal steel struts):

"Even though this may be considered to be a sustainable material, it will have no value and be unusable after this building is demolished," he comments. "You could recycle the wood and chip it but you would have to separate the steel out first which is time consuming."

He adds "Some of the big retailers are talking about using more glulam. They're convinced that it's a sustainable product, but it could be problematic to recycle because of the glue content.

"Glulam is just one example of our sector not taking the long-term view. The entire supply chain needs to think much more deeply about the life cycle of buildings and materials if we are to meet our recycling and recovery challenges." ■

National Federation of Demolition Contractors
Voice of the Global Demolition Industry

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Plugging the skills gap

As an active Construction Equipment Association member, Junaid Makda of Nylacast views the construction equipment industry skills gap not as a problem, but as an opportunity...

The phrase "skills gap" often has negative connotations across many industries. There is no doubt it exists and is an operational problem, however, it's encouraging to see and witness the positivity and passionate flair in which the issue is being addressed on a national and international scale.

It is evident to see this through the number of companies within the construction equipment industry alone which are actively investing, introducing and implementing numerous academies, training programmes and skills initiatives. This provides faith that the skills gap will soon be shortened and less likely to re-occur if the levels of commitment to skills and training continue.

We believe that where possible, companies should act as a platform for education and opportunities for a wide range of students and youngsters, whether they are looking to gain experience and insight into sales, marketing, engineering, research & development, quality or logistics – the list of interest areas is endless.

It is also important for construction companies to maintain strong relationships with local, national and international educational institutes, and regularly holding events and activities helps to engage students. Activities can include work experience and placements through to gap year placements and Knowledge Transfer Partnerships (KTPs), student open days and site visits through to careers fairs and lunch & learn sessions. Local schools, colleges and universities should also be regularly visited by company staff and current apprentices, in order to give their first hand view and insight into apprenticeships and engineering.

People are our most important asset and continuously investing in them is key. Tailor-made structured courses in management and leadership, and business improvement techniques result in employees gaining qualifications which can then be topped up to lead to university degrees – something which is dearly appreciated by those employees who did not choose the educational path at younger ages and went directly into work from leaving school.

A student day at Plantworx is very well fitted, having exhibited and participated in many exhibitions and events worldwide we often find the student days are well received. The time spent speaking and interacting with students helps to pave the foundation for the engineers of tomorrow which may well be our future customers.

This year's CEA Plantworx Construction Machinery Exhibition will be held at Bruntingthorpe Aerodrome, Leicestershire 2nd-4th June. For more info and free entry tickets to the event visit www.plantworx.co.uk .

There are many companies within the construction equipment industry all bringing value to different areas. By highlighting what they do and the benefit they provide, whether it's a small washer or a large piece of equipment, there's always a story to be told and ears to listen. You don't have to build a rocket and send it to the moon to encourage apprentices, you just have to invest the time and resources to communicate with them effectively. ■

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www.coneq.org.uk
www.twitter.com/ConEquipAssocia

Capital allowances – boosting your bottom-line

Steven Bone, Director at The Capital Allowances Partnership Ltd explains the tax relief on offer under the capital allowance scheme and what it can mean for businesses...

Clients with building projects can save substantial amounts of tax by claiming capital allowances. This is tantamount to securing a Government-funded discount on the overall cost of their building, which improves the financial viability of projects and ensures that build quality remains high.

What are capital allowances?
A business pays tax on its profits, ie income less expenditure. However 'capital' expenditure is not a tax-deductible expense. Capital expenditure is money spent with a longer-term outlook, such as constructing new buildings or extensions, or altering or fitting out existing buildings (as opposed to maintenance or repairs).

Instead, tax relief is available through 'capital allowances' - which are given to property investors, owner-occupiers and tenants. The most common allowance in practice is something called 'plant and machinery allowances'. This provides tax relief when the business or investor spends money on 'plant' or 'machinery' (P&M). It does not assist for money spent to buy or alter land, or on bricks and mortar such as the substructure and superstructure (eg, walls, floors, ceilings, doors, windows and stairs).

What assets qualify as machinery or plant?
'Machinery' takes its dictionary meaning and most construction projects include lots of obvious machinery, such as pumps, motors, fans and the like, as well as more obscure machines such as door handles or closers with moving parts. Because these are all machinery, the money spent on them qualifies for tax relief.

'Plant' is more difficult to identify though. It is sometimes defined by statute, but generally by more than 100 years of case law. In essence, 'plant' is apparatus used in a business. The surprising thing though is that most of the assets which qualify for tax relief in buildings are standard fixtures that you would find in almost any commercial property. These include sanitary and water installations, heating, ventilation and air conditioning systems; electrical installations; lifts and conveyors; fire protection; communication, security and control systems; and many furnishings, finishes and fittings.

What types of properties benefit?
Because the definition is so wide, most commercial buildings contain P&M. However, some property types are more P&M-rich than others. For these, between 20% and 45% of the money spent can be allocated to P&M. Particularly good buildings from a capital allowances perspective are those which are fitted out to a high standard, including (amongst others):

- Hospitality – hotels, public houses, restaurants;
- Healthcare – care homes, doctors and dentists practices, veterinary facilities;
- Offices.

In most cases, capital allowances statute prevents tax relief being claimed for residential property. And because capital allowances are a tax relief they can only be claimed by businesses or investors who pay income tax or corporation tax. Therefore, they

Steven Bone
BSc(Hons)
PGDip.BA FRICS ATT
Director
The Capital Allowances Partnership Ltd

cannot be claimed by not-for-profit owners or occupiers, such as central or local government, charities or the like.

What is the benefit?
Capital allowances are a tax adjustment only and do not affect the market value of the property, or the business's financial accounts.

In effect, capital allowances reduce the taxable profits of the business or investor. This saves tax at whatever tax rate they pay. For example, if a company paying 20% corporation tax spends £100,000 on P&M and claims capital allowances, this can reduce its taxable profits by £100,000 and therefore save tax of £20,000 (ie, £100,000 x 20%).

For the vast majority of businesses all (or most) of the tax savings are immediate. This is because of an accelerated capital allowance called the 'Annual Investment Allowance' (AIA). The AIA is available for expenditure on P&M up to an annual limit or cap, which is currently £500,000. When working out the business's tax bill the AIA allows up to £500,000 of expenditure on P&M to be written-off for tax at 100%. In addition, certain energy-saving and water conserving or quality improving P&M qualifies for 100% relief under a scheme called 'enhanced capital allowances' (ECAs) – based mainly on specifying particular products listed on government websites.

To the extent that the money spent on P&M exceeds the AIA cap, or is not eligible under the ECA rules, tax relief is given over several years at either 18% or 8% a year. The 8% rate mostly applies to so-called 'integral features'. These are the electrical system (including power and lighting); cold and hot water systems; heating, ventilation and air conditioning; lifts and escalators; and external solar shading. Other plant usually attracts the 18% rate.

Why is this relevant?
Whilst there is an old saying in tax that "you should never let the tax tail wag the commercial dog", in any construction project there are always choices. These can affect the tax savings available to the building employer. If the client can identify ways to save tax this boosts the bottom-line and ultimately makes the project more viable. Taking an early interest in capital allowances permits the design and specification to be 'tweaked' to improve its tax-efficiency (for example, some floor finishes qualify for relief, whereas others do not; or ECA-qualifying assets can be chosen). It also allows the right paper trail to be put in place so the client can meet its tax obligation to submit a correct and complete tax return and avoid the time, hassle and cost of an unfavourable HM Revenue compliance check.

However, to ensure proper identification and compilation of a claim, it is often wise to obtain specialist input beyond the involvement of generalist quantity surveyors and accountants.

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Fast Flexible Finance

Our aim is to ensure that our UK customers benefit from over 40 years of knowledge and experience in the construction sector. Since 1970 we have remained true to our customers – helping them to survive 4 recessions. In the good times we are also there to help businesses grow. We will always focus on the needs of our customers and treating them fairly.

JCB Finance's nationwide field force is able to offer a local service in tune with local conditions.* Our aim is to help you preserve your vital working capital whilst spreading the cost of machinery acquisition in the most cost effective and tax efficient manner. After all – you wouldn't pay your staff three years wages in advance so why do the same for your plant – paying cash won't make it work any harder on day one. In 2012 we financed 52% of all JCB machines sold in the UK.

We offer the full suite of asset finance options from Hire Purchase through to Leasing. Some of these have unique features and benefits to suit the construction industry. Our finance options are not restricted to JCB equipment but are also available for other new non-competitive machinery and all used machinery plus cars, 4x4's, commercial vehicles, access equipment and a whole lot more.

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- Many reports show that SME's have found it hard to access traditional sources of lending but in 2012 our lending grew by 31.7% with total turnover of £748 million
- In 2012 a total of 22,236 assets across 16,654 agreements were financed
- In 1993 we entered the Local Authority market lending c. £270m to date – current balances with 158 different Local Authorities
- Asset mix – JCB 62% and Others 38%
- In 2012 JCB Finance provided 21.3% (some months touching 40%) of all HP and Lease finance in the UK construction machinery market (according to Finance and Leasing Association asset finance statistics).

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JCB FINANCE

Construction Business Growing? Make Sure Your Insurance Still Fits

The Construction Industry in the UK is growing well and many companies have full order books for the next 9 or 12 months.

Demand for good contractors to do the job is now outstripping supply. This means that having gone through a period of immense pressure where customers could really turn the screw on price, contractors can now increase margin slightly and accept a contract on their terms rather than be forced to take it simply to keep the wolf from the door.

The array of contracts that are coming on stream now also means that some contractors are taking on types of jobs that they may not have done for a few years. This could be either because they weren't profitable enough or that these types of jobs simply weren't there in the downturn.

Overall this is great news for contractors, for the construction industry and because construction is one of the key drivers of our economy, for the UK.

One area of concern that JCB Insurance Brokers actively address with our customers, is making sure that as a business grows and evolves, the insurance protecting that business also grows and evolves to make sure it still fits. If it doesn't fit, it won't do the right job.

You need to deal with an Insurance Broker that understands and recognises this and will proactively ask you the right questions. It's all too easy to overlook this important issue when you are focussed on running a growing business, so it's vital that your Insurance Broker has his finger on your pulse.

There are a lot of things to think about, but your Insurance Broker should understand this and guide you through the process. These are some examples of things to consider :-

- Has the business grown – if so, how do you see this continuing into the next year?
- If the business is growing rapidly, don't wait until renewal, review mid-term?
- What type of work are you now doing? If there's a change, your current insurance policy might need amending to make sure you're covered
- Are you spending a lot more on hiring Plant in? If so, your Hired In Plant Insurance might need updating
- Are you hiring in different types of kit? Mobile Cranes or Crushers might be excluded for example so this needs addressing
- Are you digging down deeper than normal? Are your depth limits still adequate?
- Building retaining walls now? Does you're policy exclude sheet piling?
- Are you using more Bona Fide Sub Contractors to complete parts of the contract? This needs recognising in the insurance.
- Have you invested in more kit? This needs to be amended

Overlooking something may have potentially disastrous consequences for your business if something goes wrong. For example an insurance claim might not being paid if what you were doing falls outside the scope of the policy or a claim payment might be significantly reduced if you've failed to keep on top of the extra plant you've been buying.

A growing business is a great thing, but it needs good, honest insurance advice and protection that will do exactly what it needs to do, if it's needed. If you and your Insurance Broker have not kept on top of it with regular conversations and reviews to make sure your insurance still fits, you could end up with a growing pain that you really don't need.

JCB Insurance Services Ltd are specialist construction insurance brokers. From employers' and public liability insurance, contract works insurance and plant insurance through to motor fleet insurance and performance bonds, JCB Insurance are the Insurance Brokers who can place it all and support your business with practical help and support.

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The future for construction plant-hire

Following on from the CPA's industry-wide conference last year, a vision of the future has emerged. Here we provide an outline of the key points made...

It may have been some time since the CPA (Construction Plant-hire Association) last held an industry-wide conference, but the substantial list of attendees at its latest event, held in the latter part of last year, clearly demonstrated an appetite for discussion and networking. With delegates from hire companies, contractors, industry associations and government agencies, the CPA welcomed more than 140 members, and equally importantly non-members, to hear speakers discuss the ways in which we can understand and influence the future of our industry.

Peter Hansford
Chief Construction Advisor to HM Government

A Vision of the Future

Peter Hansford, Chief Construction Advisor to HM Government, provided delegates with an update on Construction 2025, the government's vision for improvement within the built environment.

"Construction is important for the UK economy," he said.

"It provides £90bn per annum to the UK economy, around 7-8% of GDP and safeguards 3 million jobs – 10% of the workforce. The important message now, is that the government gets this.

"This is not about reducing margins, but reducing waste, doing things more efficiently.

"This is about thinking and doing things very differently. That includes recognising the role that technology can and will play in the future. Technology is moving very fast and we will see a lot more site assembly of off-site manufactured components.

But we must not forget that people are the heart of this industry. We need to focus on building up the people that we need. We've got to transform our image. You may be surprised to hear that 35% of careers officers are actively discouraging children from a career in construction. We really need to attract people to this industry."

He also called upon the industry to embrace diversity when looking for new employees. At present just 14% of construction workers are female, while only 2% come from ethnic minorities.

Mr Hansford also outlined the need for an improvement in procurement methods, with greater cooperation and partnership required between suppliers, contractors and clients.

John Carroll
Project Director
Skanska

The Contractor's View

A focus on procurement is second nature to John Carroll, a Project Director at Skanska, and Head of Construction and Logistics for HS2.

Rail passengers have doubled over the past 20 years and freight is growing too – by 2030 it will be 120% of current levels. HS2 aims to bring fast rail travel from London Euston to Birmingham in Phase 1, and then on to cities across the North in Phase 2.

"The supply chain is the key to the success of HS2," said Carroll.

"HS2 will deliver 50,000 jobs a year during construction. Those people will need training and upskilling. But we will also need 450 articulated dump trucks for the earthworks. The requirements for the next 20 years for the UK construction industry are clear."

That said, he made the point that HS2 will not be a case of business as usual. The project will require companies to constantly innovate throughout.

"Unsafe companies will simply not be tolerated on HS2," he said.

Philip White
Chief Inspector of Construction
HSE

Improving H&S Statistics

Philip White, the Health & Safety Executive's Chief Inspector of Construction, is of course no stranger to safety on site. He was keen to point out how far construction has come in recent years. It is now 40 years since the Health & Safety at Work Act came into force and he said that the UK is now a world leader in health and safety.

"We have to work together, but construction has come a very long way in the last 15 years," said Mr White.

"We want to continue that close working relationship that we have with the CPA and the Strategic Forum for Construction Plant Safety."

While there have been huge steps forward in terms of safety, eight of the 23 fatalities on UK construction sites recorded so far this year were plant related, so there is always room for improvement. With that in mind, the HSE will release new Construction, Design and Management (CDM) Regulations in April of next year.

"The key changes are around the issue of coordination of health and safety prior to construction starting. We need a better focus on traffic routes, trained signallers, improved selection of plant, plus competent operators and qualified supervisors."

Looking further ahead, he promised CPA members that they would see fewer inspections, but that they would be better targeted in future. The HSE is smaller than it was just a few years ago, so needs to focus on the highest risks. This will result in new and innovative interventions and increased communication on health and safety matters.

One of the safety areas that the CPA itself has been concentrating on is the assessment of ground conditions for lifting and excavating machinery.

"No construction equipment is immune to ground conditions," said Tim Watson, CPA Technical Consultant.

With that in mind the CPA is publishing a new guidance document 'Ground Conditions for Construction Plant' to assist site workers in choosing plant and assessing ground safety prior to positioning and lifting operations.

The new guidance deals with ground bearing pressures and loadings from mobile plant and the assessment and engineering of the ground's capability to withstand those loadings.

The document can be downloaded for free from the CPA website at:

http://www.cpa.uk.net/sfpsg/#Groundconditions .

Steve Hesketh
Engineering Director
MGF Excavation Support Systems

BIM Explained
Part of the focus of this year's conference was a look forward to the technology that will influence future construction. To help delegates understand what is available now and going forward, Steve Hesketh, Engineering Director at MGF Excavation Support Systems, provided many with their first chance to better understand BIM.

BIM is a process of using information and design data to model everything from individual components to complete projects, to allow companies to visualise how a project can be taken forwards and to reduce risk on site.

"We are trying to embed information modelling in every stage of our business," says Mr Hesketh.

Unlike many companies, MGF puts all of its connected digital information on the internet for others to benefit from. Mr Hesketh recognised that some companies might fear their competitors seeing how things are being done, but insisted that technology is moving so quickly, that the company may well have moved on to its next project.

"It's not as expensive as people might think to do all of this work," said Mr Hesketh.

However he insisted that connected digital and BIM are very much at the early stages and will evolve rapidly, with costs dropping further.

"Everyone is going to have to be digitally connected eventually," he said.

"But there are huge opportunities for plant hire. Web-based collaborative working will become the norm in the future. You will have the latest data from site and all that data will be stored in the Cloud for anyone to access.

"BIM makes a massive difference and there are huge benefits to be gained."

Elliot Mawbey
Principal Digital Engineer
Laing O'Rourke

Adopting New Technologies
He was not alone in his belief that BIM is very much an essential part of future construction. Elliot Mawbey, Principal Digital Engineer at Laing O'Rourke, said that his company had been using 3D modelling since 2007, initially working from 2D drawings.

Laing O'Rourke has been involved in BIM for some years and now uses digital modelling and engineering both in preparation, and while working through a project. BIM provides visualisation for the client and for the workforce and allows Laing O'Rourke to evaluate logistics, crane positioning, temporary works and to demonstrate how the work will be done.

Indeed Mr Mawbey is already talking about 4D modelling for programme validation.

"We believe we are in the early adopter's stage, but we are getting there," he said.

"We're embedding it in every department in the business. Digital engineering is contributing to reduced rework, improved coordination and sequencing."

Stephen Radley
Director of Policy and Strategic Planning
CITB

The Training Challenge

Of course while new technologies are sure to improve efficiency and productivity on site, they do require a trained workforce to maximise their performance. Stephen Radley, Director of Policy and Strategic Planning at the CITB, recognised that as the industry continues to recover from recession, there is already a skills shortage in some areas.

He said that around 390,000 staff left the industry in the downturn and a further 410,000 are due to retire in the next five years. The CITB is therefore reviewing how it works and how it responds to the changing needs of the industry.

"CITB has to develop a greater understanding of what the future will look like for construction," said Mr Radley.

"Employers say that legislation, regulation and new technology are the drivers for change. We are also expecting new technologies to require new skills."

This will require increased collaboration with industry and a need to change the way that people are trained and upskilled.

In Conclusion

Commenting on the many topics that had been touched upon during the conference, a panel of plant-hire industry leaders, including Andrew Turner from Camfaud Concrete Pumps, Douglas McLuckie of A-Plant and Hugh Edeleanu from HE Services, responded to questions from the floor.

"We'd like to be able to provide our customers with more information and we will in the future gear up to provide that information, but we are not there yet," admitted Mr Turner.

"The key thing for me is planning," said Mr McLuckie.

"Then we won't have so much kit standing and costing money. However telematics has seen a huge leap forwards for plant hire."

Mr Edeleanu agreed, adding: "Telematics gives us utilisation at the touch of a button. While we'd like to offer our customers more though, they quite often don't know what they want until the last minute anyway."

All three agreed on one thing however, despite all operating in-house training and taking on apprentices, they agreed that the industry is going to desperately need new people.

"The key is not just retention of existing staff, but attracting new staff to our industry," said Mr Turner.

"We've got to attract younger people into the industry. In 5-10 years time it will be too late," said Mr Edeleanu.

Planning is now underway for the 2015 event and will take place once again at Wyboston Lakes, Cambridgeshire on 4th November 2015. The 2015 event will follow a similar format with key industry speakers. ■

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www.twitter.com/CPA_Planthire

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Training at the National Construction College

The latest training courses available at the National Construction College are highlighted here by Chris Blake, Curriculum Development Manager (Plant) at the CITB...

With lifting being an everyday site occurrence, including wide use of the 360 excavator in addition to the many crane disciplines, having qualified Slinger/Signallers has never been more important.

As industry continues to fully utilise the 360 excavator incorporating lifting activities, many companies have fully utilised the National Construction College (NCC) offer and have qualified staff in place. Experienced longstanding Blue Card operators need only complete the applicable Lifting theory element, (usually an hour maximum duration) to ensure your company is at the forefront in qualifying your operators.

At the NCC we ensure Slinger/Signallers are industry ready. Our courses have variable durations to reflect those with some experience not requiring the full three days training. This ensures operators have minimum time away from site, and where the short duration course is taken, course costs are also reduced.

Plant training in London at TUCA updated

To constantly address the demand in the London area for small plant machinery, we continue to offer the Skid Steer loader, Slinger signaller and Ride on Roller within our Tunnelling and Underground Construction Academy (TUCA) provision. This ensures


Chris Blake, Curriculum Development Manager (Plant)

your ground worker operatives who regularly use machines can gain the CPCS cards at a local London centre, minimising time off site. Our provision of full duration, short duration and assessment only routes will ensure the courses are tailor-made to your individual requirements.

Trailer Mounted Concrete Pumps
To meet the continuously changing demands of the industry, our plant product category has expanded to include the delivery of both training and assessment for the operation of trailer mounted concrete pumps.

This service is offered via the TUCA centre in Ilford or on customers 'live' sites. On-site, candidates can operate their regular equipment during assessment which helps minimise any anxiety that undoubtedly comes with any form of test. Where training is required, NCC offer a variety of training delivery lengths to meet differing requirements of novice, limited experience, and fully experienced pump operators.

CPCS Category A68
Our CPCS A68 no load specific engineer and transporter operator assessments are still very much at the forefront of NCC delivery with Middleton Aggregates Ltd one such company who have taken up this offer. Hayley Johnstone, Low-Loader Coordinator comments:

"Middleton Aggregates Ltd believe comprehensive and role specific training is a must for all employees of our company. Having received training in the A68 module at CITB, we can assure our customers that our delivery drivers and fitters have the competence and proven skills that they need, and our customers require".

New online card checker from CITB
Our new online card checker covers all card schemes administered by CITB including CPCS. It enables quick and easy confirmation that the cardholder matches the card and their qualifications are up to date.

There are no log-ins or passwords required, simply:

- Access the website at citb.co.uk/cardcheck
- Key in the cardholder's details to check their credentials
- Get an instant outcome

Order your 2015 National Construction College Course Programme now at **citb.co.uk/training**

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National Construction College

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Building Regulations

Any person carrying out a building project that aims to create something new, or extend an existing building, has to comply with Building Regulations. The following summarises each regulation and includes a link to each approved document.

Part A – Structural Safety

Part A aims to ensure the integrity and stability of a building: loading, ground movement and disproportionate collapse must be addressed.

Part A covers technical guidance concerned with the requirements in regards to structural safety and incorporating any changes arising as a result of the Building Regulations 2010.

This includes the July 2013 amendments that came into force on 1 October 2013.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/parta/documenta

Part B – Fire Safety volume 1 & 2

This section covers the technical guidance contained in Part B (Approved Document B) of schedule 1 of the Building Regulations concerned with the requirements in respect to fire safety.

Each volume deals with 5 specific areas:

- Means of warning and escape;
- Internal fire spread (linings);
- Internal fire spread (structure);
- External fire spread;
- Access and facilities for fire and rescue services.

Volume 1 – Dwelling Houses

This is the recent edition of Approved Document B – Volume 1: Dwellings. It supersedes the original 2006 edition by incorporating the changes made as a result of the Building Regulations 2010 and Building (Approved Inspectors etc) Regulations 2010. This is Volume 1 of the revised Approved Document B and should be used with Volume 2 for all applications received after 6 April 2007.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partb/bcapproveddocumentsb/bcapproveddocbvol1/

Volume 2 – Buildings other than dwellings

This is the current edition of Approved Document B – Volume 2: Buildings other than dwellings. It incorporates amendments made to reflect any changes arising as a result of the Building Regulations 2010. The changes mainly reflect regulation number changes as a result of re-ordering. There have been no amendments to the substantive requirements in Schedule 1 (ie Parts A to P) of the Building Regulations.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partb/bcapproveddocumentsb/bcapproveddocbvol2/

Part C – Site preparation and resistance to contaminants and moisture

The aim of Part C is to ensure the health and safety of the building's users with regard to the effects of pollution and contaminants. In addition, emphasis is given to resistance to moisture in terms of providing a barrier against ground water and the weather.

This current reprint of Approved Document C – Site preparation and resistance to contaminates and moisture, incorporates amendments made to the 2004 edition. This includes the July 2013 amendments that came into force on 1 October 2013. This reprint further incorporates editorial corrections and amendments.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partc/documentc

Part D – Toxic Substances

Part D examines the potential of cavity wall insulation to release toxic fumes into a building. The Document stipulates that fumes should not penetrate occupied parts of the building, and only where a continuous barrier is used, may potentially dangerous substances be used.

This current edition of Approved Document D (Toxic Substances) has been updated and replaces the previous 2002 edition.

It incorporates amendments made to reflect any changes arising as a result of the Building Regulations 2010. The changes mainly reflect regulation number changes as a result of re-ordering. There have been no amendments to the substantive requirements in Schedule 1 (ie Parts A to P) of the Building Regulations.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partd/approved

Part E – Resistance to the passage of sound

This document deals with 4 major areas including:

- Protection against sound from other parts of the building and adjoining buildings;
- Protection against sound within a dwelling house;
- Reverberation in common internal parts of a residential building;
- Acoustic conditions in schools.

This current edition of Approved Document E – Resistance to the passage of sound, has been updated to incorporate amendments made to reflect any changes arising as a result of the Building Regulations 2010.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/parte/approved

Part F – Ventilation

The Part F document states that ventilation is the removal of 'stale' air from a building and replacement with 'fresh' outside air. This of course assumes that the outside air is of reasonable quality.

The Document states that ventilation is required for one or more of the following purposes:

- Provision of outside air for breathing;
- Dilution and removal of airborne pollutants including odours;
- Control of excess humidity (arising from water vapour in the indoor air);
- Provision of air for fuel-burning appliances (which is covered under Part J of the Building Regulations).

This 2010 edition of Approved Document F – Ventilation has been updated and replaces the previous edition.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partf/approved

Part G – Sanitation, Hot Water Safety and Water Efficiency

New requirements set out within the document include:

- Cold water supply;
- Water efficiency;
- Hot water supply and systems;
- Sanitary conveniences and washing facilities;
- Bathrooms;
- Food preparation areas.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partg/approved

Part H – Drainage and Waste

Part H states that adequate drainage systems must be provided in order to promote both personal and environmental health. Also highlighted, is the importance of a working sewerage infrastructure and maintenance, along with pollution prevention.

There are 6 main sections to Part H:

- Foul water drainage;
- Wastewater treatment systems and cesspools;
- Rainwater drainage;
- Building over sewers;
- Separate systems of drainage;
- Solid waste storage.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/parth/approved

Part J – Heat producing appliances

Part J is concerned with all heat producing appliances that could produce health and safety hazards such as fire, explosion and carbon monoxide poisoning. Appliances such as boilers, room heaters and oil tanks are included, with the addition of liquid fuel storage systems.

There are 6 main sections to these regulations:

- Air supply;
- Discharge of products and combustion;
- Protection of building;
- Provision of information;
- Protection of liquid fuel storage systems;
- Protection against pollution.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partj/approved

Part K – Protection from falling

Part K is concerned with the health and safety aspects of areas such as stairs, ladders and barriers and also addresses the risk from falling. This edition has been updated by combining Approved Document N: Glazing and also some overlapping guidance that is in Approved Document M: Access to and use of buildings respectively.

This document deals with 6 main areas including:

- Stairs, ladders and ramps;
- Protection from falling;
- Vehicle barriers and loading bays;
- Protection against impact with glazing;
- Additional provisions for glazing in buildings other than dwellings;
- Protection against impact from and by trapping doors.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partk/approved

Part L – Conservation of fuel and power

Part L specifically refers to thermal efficiency standards and affects insulation and heat loss, aiming to improve the low-carbon efficiency of buildings. The changes listed in this document for Approved Documents L1A, L1B, L2A, L2B are made to take account of a recast of the European Energy Performance of Buildings Directive (Directive 2010/31/EU).

This document has 4 different parts to it:

- L1A – Conservation of fuel and power (New dwellings)
- L1B – Conservation of fuel and power (Existing dwellings)
- L2A – Conservation of fuel and power (New buildings other than dwellings)
- L2B – Conservation of fuel and power (Existing buildings other than dwellings)

To view all the documents click below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partl/approved

Part M – Access to and Use of Buildings

Part M aims to provide inclusive access to, and circulation within all buildings, giving particular emphasis to the requirements for facilities and disabled people.

It covers 4 main areas:

- Access and use;
- Access to extensions to buildings other than dwellings;
- Sanitary conveniences in extensions to buildings other than dwellings;
- Sanitary conveniences in dwellings.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partm/approved

Part N – Glazing – Safety in relation to impact, opening and cleaning

Part N deals with all aspects of safety relating to glazing, with added requirements related to safe access for cleaning windows aimed to reduce the risk of injury when cleaning glazed surfaces, and the safe opening and closing of windows.

The 4 main areas deal with:

- Protection against impact;
- Manifestation of glazing;
- Safe opening and closing of windows, skylights and ventilators;
- Safe access for cleaning windows etc.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partn/approved

Part P – Electrical safety – Dwellings

Part P aims to reduce the number of domestic accidents, deaths and fires arising from electricity. It is also seen as a way to improve the competence of those undertaking electrical work.

This edition:

- Reduces the range of electrical installation work that is notifiable;
- Installers who are not a registered competent person may now use a competent person to certify work as an alternative to using building control;
- The technical guidance throughout now refers to BS 7671:2008 incorporating Amendment No 1:2011.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partp/approved

Building Regulation 7 – Materials and workmanship

This document requires that any building work shall be carried out with proper materials and in a workmanlike manner. It reflects the full implementation of European Regulation 305/2011/EU-CPR covering construction products referred to as the Construction Products Regulation, from 1 July 2013

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/workandmaterials/approved

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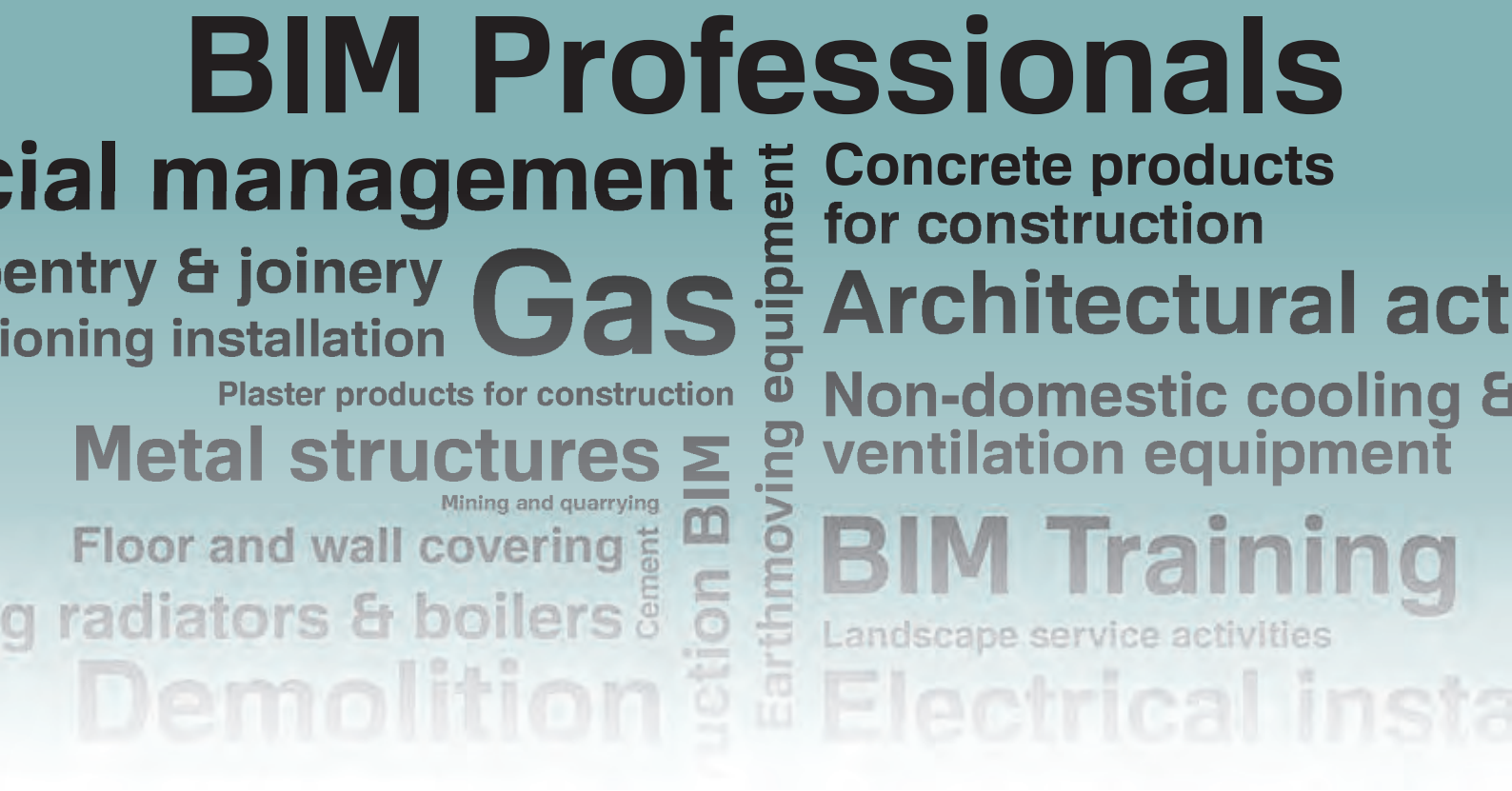

YOUR ONE-STOP-SHOP PLANNING DIRECTORY

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.

www.adjacentgovernment.co.uk/npbc/

NATIONAL PLANNING & BUILDING CONTROL DIRECTORY
THE ONE-STOP-SHOP FOR PLANNING & BUILDING CONTROL

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