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ADJACENT PLANNING & BUILDING CONTROL TODAY

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IN THIS ISSUE

Our Spring edition contains articles for the entire AEC industry ranging from the biodiversity duty to plant and equipment security. Highlights include:

Stephen Hamil – NBS (National Building Specification)
James Ritchie – The Association of Project Safety
Malcolm Kent – Construction Equipment Association

A solar home future?

Paul Hutchens, Chairman of the Solar Trade Association New Build Working Group on the benefits of solar panels

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Foreword

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

Shortly before the dissolution of Parliament, the coalition government issued the final results of the Technical Housing Standards Review. Running to just over 4000 pages of legislation, regulation and guidance, the complete package was a 'tidying up' exercise to deal with 'complex, overlapping or contradictory housing standards', replacing over 100 different policies and standards into a single set of national standards, most of which are published in the Building Regulations.

The final results of the review sees tiered regulations in Part M and Part G, as well as a new mandatory regulation for all new housing Part Q – security, as well as a National Space Standard which has not been placed in the building regulations.

From October 1st 2015 Local Planning Authorities (LPA) can impose optional higher standards on space, water and access to residential developments in their area provided that they have set policies in their local plan. The ability to impose these standards is dependent on the LPA demonstrating a local need and also the viability of developments if the new higher standard was required.

The developer must then inform their selected building control body (BCB) if an "Optional" requirement has been imposed on their development. It is the job of the BCB to enforce these as if they were the minimum standard for that development in the usual way.

Space – In addition to a minimum gross internal floor area and built-in storage area dependent on the number of bedrooms, the standard will insist that at least one bedroom in a two-bedroom home is a double (or twin) room. Minimum room sizes also apply as well as a minimum floor to ceiling height of 2.3m for at least 75% of the gross internal area.

This standard has not been incorporated into Building Regulations. Instead, it may be imposed by LPAs as a planning condition.

Water – Minimum water efficiency standards were introduced in 2010 and currently require that new homes are designed so that calculated water use is not more than 125 litres/person/day. This minimum standard is to be retained with an optional tighter standard of 110/litres/person/day available locally 'where there is a clear local need'.

Security – The new mandatory Part Q standard intends to introduce a level of consistency across different areas and consolidate around cost effective measures to reduce the incidence of burglary.

Access – The new 2015 regulations substantially change Approved Document M to allow for new optional access requirements to be available locally. Existing standards are to be consolidated with Lifetime Home Standard being replaced by 'Category 2 – Accessible and Adaptable Housing' and Wheelchair Housing Standards to be replaced by 'Category 3 – Wheelchair User Dwellings in Part M.

I am literally still reading through the published documents and coming to terms with the complexities of the issues that the new system will throw at the building control and planning professionals as well as our customers. It is going to be a busy six months. The complete final package of documents and announcements is available here. ■

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Introduction

As this edition of PBC Today is put to bed, we are in the last week or so of campaigning in the General Election.

Both the Conservatives and Labour are promising more housing, with the former committed to 200,000 new starter homes built on brownfield sites by 2020 as well as 275,000 additional affordable homes by the same date. Their recent announcement of the 'Right to Buy' scheme however, has not been met with enthusiasm and is seen as achieving the opposite result to the one promised.

Whatever promises are made, it seems a universal agreement that it won't be enough to meet the housing crises.

We open this edition with an article from Cllr Ken Browse, Chair of NALC who outlines his concerns arising from the NPPF and why we need a planning framework for communities.

Turning to BIM, perhaps the biggest news has been the release of NBS' BIM Toolkit. This edition boasts two articles from Stephen Hamil – one outlining how the NBS BIM Toolkit has been received around the country and what happens next, and the second describing how the Toolkit is used to support Employer's Information Requirements (EIR).

Our BIM section is as extensive as ever with articles from experts discussing the ongoing BIM revolution and how to take advantage of the experience, advice and guidance that is available.

Energy efficiency in buildings is also extensively covered in this edition with many articles detailing the benefits of retrofitting and insulation methods. Ed Matthew, Director of the Energy Bill Revolution also explores the facts behind our fuel poverty crises and calls on the next government to make home energy efficiency a national infrastructure spending priority.

Finally, I would like to draw your attention to an article from Malcolm Kent, of the CEA who provides an update on the progress towards new engine emissions legislation. The one aspect of the proposed new legislation which is potentially the most worrying for machine owners is that it would prevent the manufacture of all non-Stage V engines from the date the new stage starts. Industry groups are not taking this lying down and are pushing hard for the draft legislation to be amended to allow the continuation of the supply of like-for-like replacement of engines for older machines.

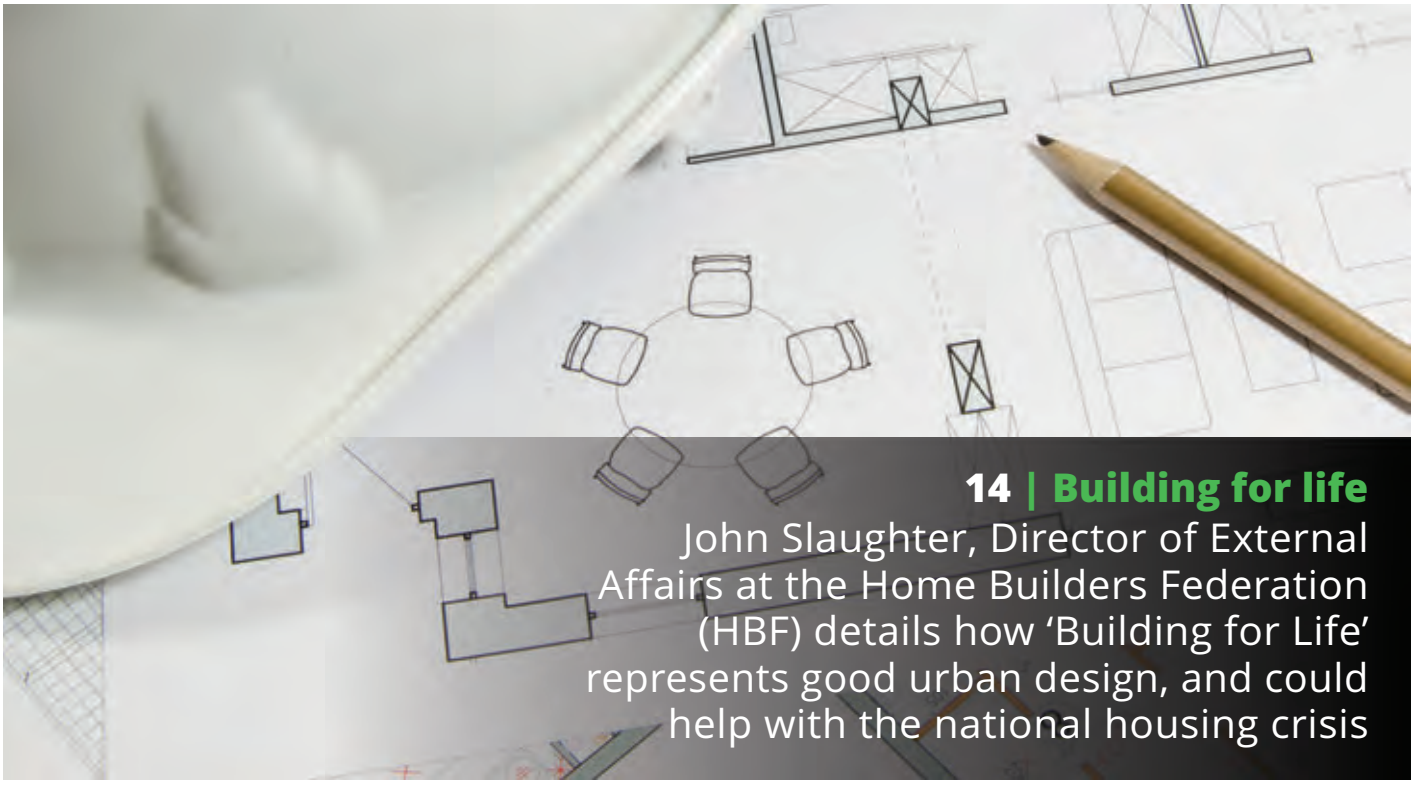
I hope you find something of interest in this edition, and as ever welcome your comments and suggestions for future editions. ■

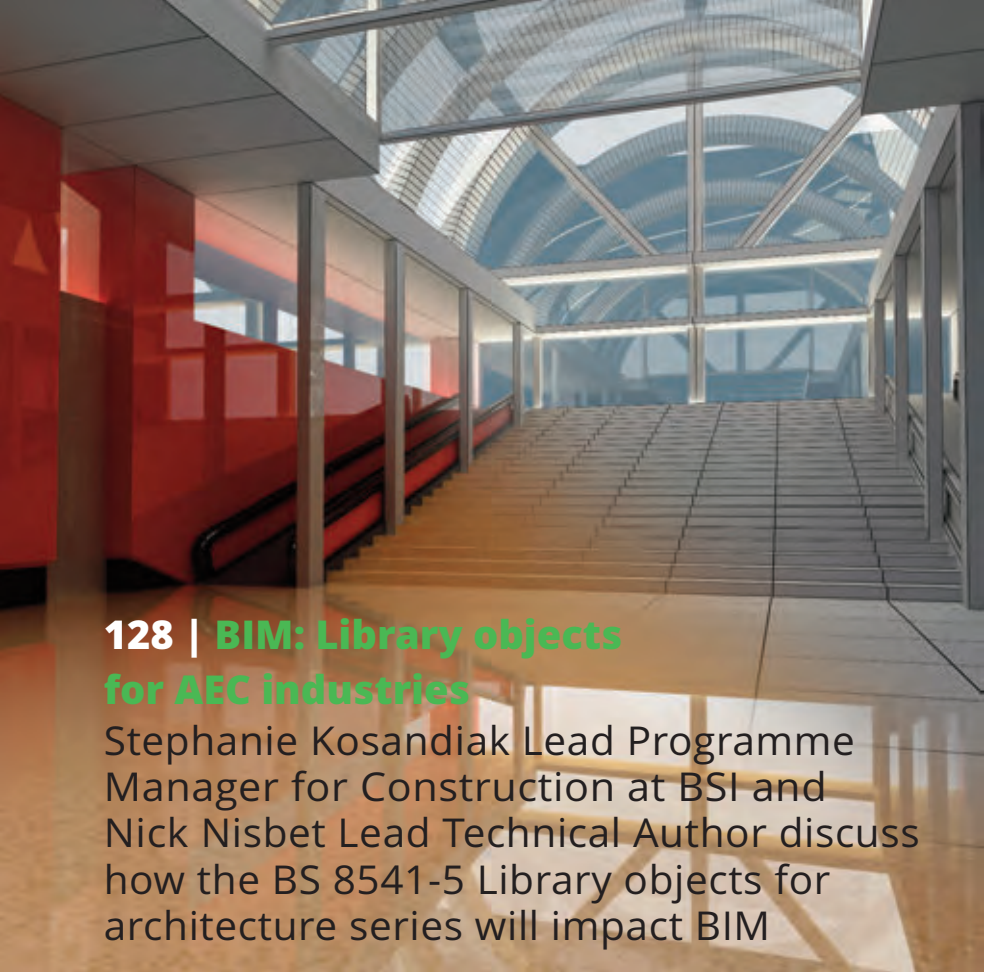
Contents

April 2015

Planning and Development

Overview





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Finding a planning framework to support communities

Cllr Ken Browse, Chair of the National Association of Local Councils outlines concerns arising from the NPPF and why we need a planning framework for communities...

Undoubtedly the coalition government sees the reform of the planning system as a key driver of economic growth. In other words 'reducing all that red tape and bureaucracy' from previous planning policies, which according to the government hampered development and therefore stifled the economy.

So the present National Planning Policy Framework (NPPF) in a 'bonfire of guidance' reduces it from 1,000 pages to just 50. But once the framework went live in March 2012, the serious business of planning began. The country needs a huge effort at a local level to get plans in place that properly reflect the integration of social, economic and environmental goals, and protect places people value.

So what does NALC think the impact of the NPPF has been on local (parish and town) councils and communities?

Firstly, NALC is a key supporter of neighbourhood planning which revolutionised the way local councils and communities can shape and design the future of their places.

We also support the broad thrust of the NPPF, in that the rationalisation of government planning policy statements and guidance notes to form a single consolidated document is in principle a good idea, and we think this should render the process of understanding planning simpler and more open.

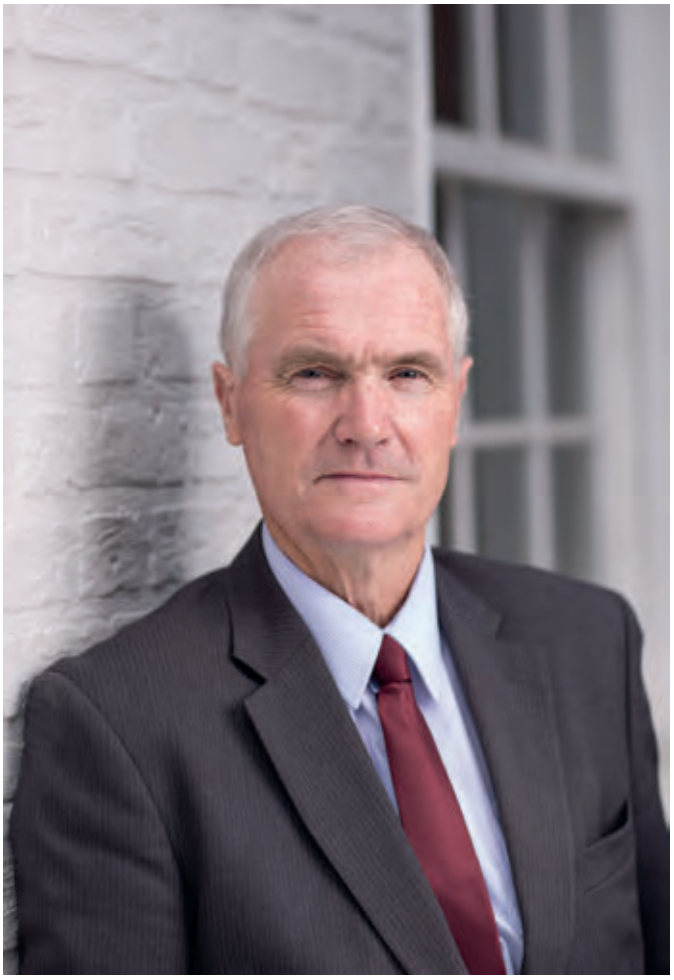
However, NALC believes the NPPF has not functioned effectively in many parished areas since its introduction. We remain concerned about the ability of planning authorities to determine planning applications that reflect the opinion of local councils without fear of developers winning applications on appeal, and planning authorities being awarded considerable costs against them.

Furthermore, we think there is too much focus on meeting housing targets and not enough focus on the quality of developments or on the mix of housing. It should be made mandatory to consult and engage with local councils in advance of submitting an energy-related planning application.

Local planning authorities should be particularly mindful of the need to support infrastructure requirements identified in adopted neighbourhood plans. We strongly encourage local councils and neighbourhood forums that have an adopted neighbourhood plan to request from their local planning authorities a share of infrastructure proceeds from Section 106 agreements or the Community Infrastructure Levy. We encourage local planning authorities to give full consideration to such requests.

We recommend that the government revoke its decision to limit to five the number of planning obligations that can contribute to a single piece of infrastructure until the proposed 2015 review of the Community Infrastructure Levy has taken place. In the meantime, local authorities should have a free choice between the use of the Community Infrastructure Levy and Section 106 agreements for the funding of infrastructure.

We call on local government (including local councils), the property industries and the voluntary sector to



Cllr Ken Browse, Chair, National Association of Local Councils

work together to produce a new 'planning users concordat' setting out the respective responsibilities of each group.

"We strongly encourage local councils and neighbourhood forums that have an adopted neighbourhood plan to request from their local planning authorities a share of infrastructure proceeds from Section 106 agreements or the Community Infrastructure Levy."

Regarding the operational impact of the NPPF on town centres – the original document stated being concerned with the views of communities – our experience is that developers have been delivering as little community infrastructure as they can, and we remain concerned there is no actual sanction or community recourse.

Developers in town centres need to better consider the impact of their plans on communities, to understand the demography, infrastructure, amenities and workings of town centres. House builders need to model communities on the people living where development is taking place to test the impact of their plans and intentions. It seems that not enough of this activity has been happening on the ground by developers.

Our view on the operational impact of the NPPF on energy (non-major infrastructure) planning in parished areas, is it should be a mandatory requirement for the applicant to consult with all locally affected parishes/wards in advance of submitting a planning application, particularly in the case of wind turbines because the impact is far reaching.

We see the NPPF as a real test of the government's credentials, in that national targets of development and house building continually ride roughshod over the needs and demands of local communities and councils. We believe that the government should be putting more pressure on local planning authorities to protect their communities against the threat of undesirable development by moving quickly to get an adopted local plan in place that fits alongside communities' neighbourhood plans. ■

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May 7th – Who gets the planning vote?

With a General Election weeks away, it is not a bad time to see who is offering what to that part of the electorate for whom planning raises important issues. Over the last two parliaments, one of each colour with a bit of orange thrown in, town planning and local government has been legislated to within an inch of its life, so much so that number one of the Royal Town Planning Institute's (RTPI) election wish list is that, for the next parliament, there should be no primary legislation, allowing all of the changes of the last few years to bed down, within a general framework of gradual policy shift. So, for whom are the development industry and the custodians of national/local planning policy going to cast their vote come 7 May?

Housing

The competition for who promises to build most new houses would be won by a Lib Dem government for whom the annual target is 300k built to the Zero Carbon Standard. This would include ten new garden cities, five of them on a new rail link between Oxford and Cambridge. The Labour Party looks to build 200k homes annually, and, to do so, would endorse the use of Green Belt Land for housebuilding. The Conservative targets may not reach these heights, looking for 200k homes on brownfield sites by 2020 and 165k affordable homes (2015-2018). Perhaps wisely, there is no commitment to an annual rate of construction.

New Towns

The Garden City concept is experiencing a new level of popularity. Labour's housing target includes 500k new homes to be built in a new generation of towns, garden cities and suburbs. The Conservatives look to local authorities to drive the initiative for new communities of at least 15k homes each. So far, only the Lib Dems appear to have given thought to how many and where.

Affordable Housing

The Conservatives claim that 200k affordable homes have been built in this parliament, at a rate not achieved since 1994. They look to provide 100k discounted houses for first time buyers, a new homes bonus for local authorities and a reduction in the time period for right to buy opportunities. The Labour Party promises to revoke the recently applied threshold which precludes the provision of affordable homes on developments of fewer than ten houses.

Brownfield Sites

Each party's planning policy lays understandable stress upon the role played by brownfield sites. The Conservatives look to make brownfield development immune from Community Infrastructure Levy. Labour would adjust the NPPF to make it a requirement to include a brownfield first sequential test. The Lib Dems acknowledge that their ambitious housing target would not be achieved only through brownfield site development, notwithstanding their endorsement of the brownfield-first principle. UKIP's interest in getting Britain building includes the relaxation of planning rules for brownfield development, the creation of a national register of such sites, low-interest government bonds to enable decontamination, the suspension of Stamp Duty on first sale brownfield site homes and the relaxation of VAT.

Green Belt

Probably not a vote winner to suggest that the Green Belt is expendable, though Labour is open enough to admit to the possibility if it helps in building enough homes, and the Lib Dems presumably accept that brownfield sites and new communities will not hit their ambitious target without greenfield sites. The Conservatives, in the spirit of localism, leave

Mark Thackeray,
Principal Consultant

Green Belt definition and use to local councils. UKIP "will protect the Green Belt", though they don't say from what.

"The competition for who promises to build most new houses would be won by a Lib Dem government for whom the annual target is 300k built to the Zero Carbon Standard."

Other Stuff

Planning and development issues often crop up as side lines in political manifestos, ideas that might sneak in under the radar and those which might be forgotten by 8 May. The Lib Dems look to introduce devolution into the Use Classes, allowing LPAs to determine such matters locally. UKIP would have planning permissions for large-scale developments overturned by a local referendum securing 5% of district voters. Planning Minister Brandon Lewis has acknowledged that LPAs which choose to rely upon the NPPF rather than produce a local plan could do so without coercion from a Conservative government. Labour will allow LPAs to secure land from developers who hoard it rather than implement a planning permission, and would give towns a right to grow over boundaries into neighbouring districts which oppose such growth. UKIP would, of course, scrap HS2 while the Conservatives will move on to HS3 across the Pennines. Only the Labour Party addresses the cost of providing a development control service and would do so by enabling LPAs to set planning fees locally on a full cost recovery basis "in return for guaranteed high levels of service".

Pre-Election Thoughts

It is, of course, highly improbable that planning policies or proposals will play a significant part in the General Election, except where local issues prevail. UKIP might secure more votes than they might expect along the HS2 route and Labour's seemingly flexible attitude towards the Green Belt is unlikely to damage their prospects in the Home Counties. While housebuilding and the re-use of brownfield land are critical issues, none of the parties have anything new to say in this regard. Indisputably, the country needs to build houses at a faster rate, homes that new purchasers can afford. The targets are ambitious, but they have to be, and none of the parties appear to have a worked-up strategy for housing, certainly not one that delivers in the time scale of a single parliament. The RTPI's ambition for the new government, that it should plan to solve the housing crisis within a generation, is too long term for politicians, especially when one generation has already been let down by housing strategy. Perhaps housing is one social issue which, can only be handled by a coalition.

The RTPI will be relieved to see that no party anticipates more primary legislation and that the changes of the past few years will get the chance to succeed or fail over a reasonable period. In the meantime, do what you always do – vote for whoever cuts petrol and beer duty the most.

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Building for life

John Slaughter, Director of External Affairs at the Home Builders Federation (HBF) details how 'Building for Life' represents good urban design, and could help with the national housing crisis...

The design of housing developments is rightly of interest to all those involved in or affected by the delivery of new housing – communities, local authorities, and of course house builders themselves. This interest is naturally growing as we seek to increase the supply of new homes significantly to tackle our national housing crisis.

At the same time, however, everyone will have their own view of what constitutes good design in a particular location and this means there is inevitably a degree of subjectivity involved in reaching decisions. How are we therefore to encourage and support good urban design in a way that is responsive to local context while being practical for house builders to implement?

For HBF and its partners – Design for Homes and Design Council Cabe – a large part of the answer lies in the use of Building for Life 12 (BFL12)

Building for Life 12 is a distillation of many years' experience of working to encourage good design. The original Building for Life was established in 2000 with the aim of capturing the generally accepted principles of urban design for residential development in one place and in a way that could apply to a wide range of different housing projects.

It comprised 20 principles broadly covering issues from environment and community to design and construction. The government recognised Building for Life as the national standard for good design and a system of "awards" was initiated for projects that were judged to have achieved the majority of the 20 principles – silver for 14 and gold for 16 or more.

This was effective in raising awareness of good design principles and providing recognition for well-designed developments. There were, however, concerns over time that some of the 20 BfL criteria were more a product of current policy objectives than the enduring principles of urban design and that BfL was not as accessible as it should be to local communities, councils and the full range of the industry.

This led the BfL partners to rethink their approach, with a particular stimulus to doing so being the current government's promotion of localism in planning, including neighbourhood plans, at the same time as reinforcing the importance of good design in the new National Planning Policy Framework (NPPF).

In this context we worked with local authorities, design experts and community representatives as well as industry practitioners to make sure that Building for Life was fit for purpose for the new planning regime. We concluded we could rationalise the key elements of good design into 12 principles and express these in a way that was far easier to grasp for non-professionals without detracting from the robustness of Building for Life.

The 12 principles are made up of 4 questions in each of 3 chapters:

- Integrating into the neighbourhood;
- Creating a place;
- Street and home.

We launched the resultant BfL 12 in the autumn of

2012 and it has already gained widespread recognition as an effective means of promoting good quality development and facilitating a sensible dialogue between councils, communities and developers on design.

It has succeeded in the latter by providing a common and accessible language exploring the 12 BfL principles and providing a set of questions or prompts that allow the application of the principles to particular developments to be probed by non-experts as well as professionals.

In addition, because the BfL 12 principles are set out in a non-prescriptive way they can be successfully applied to all sizes of development and a wide range of development contexts. It is this practicality that underpins BfL's usefulness and attractiveness to all parties.

Most recently, we have sought to reinforce the incentives for developers to follow BfL12's principles by creating an independent accreditation for new projects – which we are calling "Built for Life".

Based on a simple 'traffic light' system (red, amber and green) BfL12 recommends that proposed new developments aim to:

- Secure as many 'greens' as possible,
- Minimise the number of 'ambers' and;
- Avoid 'reds'.

The more 'greens' that are achieved, the better a development will be. A proposed development might not be able to achieve 12 'greens' for a variety of reasons not necessarily resolvable due to the nature of a site and its context. The BfL partnership is therefore making developments that achieve 9 'greens' eligible for 'Built for Life' accreditation.

'Built for Life' accreditation is an independently assessed quality mark available immediately after planning approval, offering developers the opportunity to promote the quality of their developments during sales and marketing activity. It will also help those seeking a home to find a place to live which has been designed to have the best possible chance of becoming a popular and desirable neighbourhood.

Developments that achieve 12 greens will be eligible for Built for Life "Outstanding".

We believe BfL12 offers an excellent basis for promoting constructive dialogue on good design and supporting house builders in investing in this and would wish to engage with all parties in ensuring its many benefits can be maximised. ■

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From Bradley Curve to Cultural Safety™ Map

Many people will be aware of the Bradley Curve and the three phases of Dependence, Independence and Interdependence. Beyond that however, fewer will know about the how critical workforce behaviours to each of the phases and fewer still how it was derived. That apart there is still the question of what does it mean for the day-to-day management of safety and the development of your safety culture? This article provides answers to those questions and looks at a modern approach to Safety Culture assessment and development.

At first sight the 'Curve' is presented as a tri-state model rather than a continuum so the name seems rather anomalous. So let's examine that. The underlying principle is that Culture is something that changes slowly; there's no switch that can be thrown overnight to move from one state to another.
It's notoriously difficult to measure things that move slowly and even worse trying to tie down the intangible so how best to quantify a culture and know how to improve it? If it's a long journey then perhaps we need a map as well as a model.

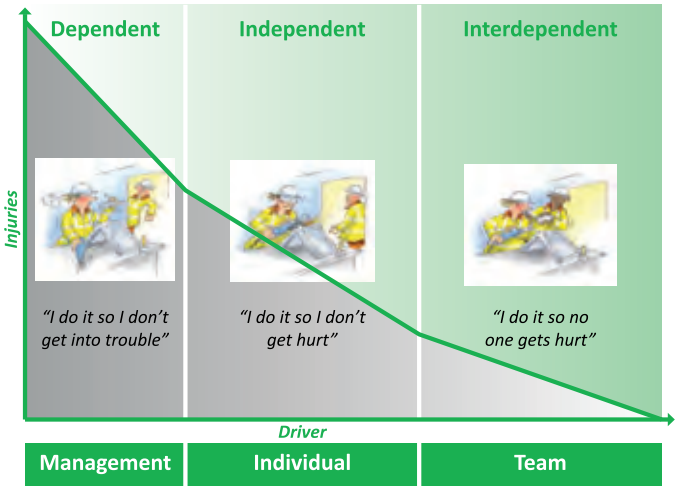

Figure 1 The Bradley "Curve"

Sociologists and Anthropologists tend to define a culture as consisting of four elements, Belief Systems', such as a religion; and 'Rituals' – frequently performed behaviours often associated with a ceremony or right of passage designed for a particular purpose Language and 'Artefacts' as beloved of Time Team and archaeologists;'. Put simply go somewhere where any one of the four are significantly different and you have a different Culture.

So it can be seen that Behaviours which the Bradley curve focuses on are only part of a Culture and need to be associated with Beliefs, objects & places and how those are talked about.

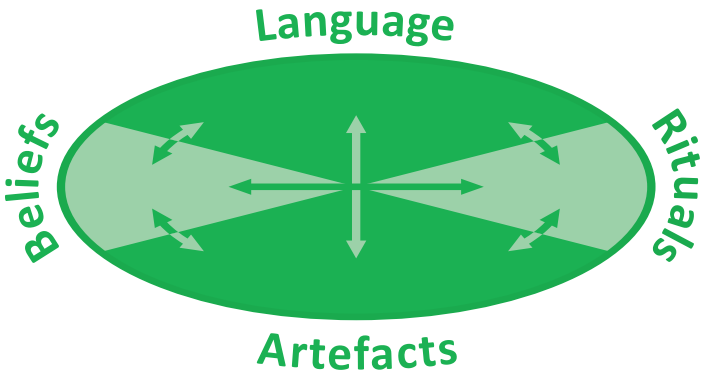

Figure 2 The Cultural Safety™ Model

It's surprisingly easy to translate this neatly into the workplace. Our tribe is our Company, the beliefs are the Values & Mission Statements; the Rituals are the formal Method Statements & Procedures (and the informal undocumented ones!); the artefacts are the logos, workwear, tools of the trade, site layouts and crucially the documentation & reports used to control and manage a classic safety system; How they are written, style and tone as well as when they are read and discussed, is the language element.

The interrelation of Behaviours to Beliefs, Artefacts & Language would indicate that there's more to developing a stronger safety culture than the Bradley curve alone would indicate.

As you unpack the essential elements of the Bradley curve it comes down to just two basic things: Teamwork and Ownership.

An easy way to determine the degree to which ownership has been assimilated by the workforce what you are looking for is the degree to which people believe that Safety is done:

- **TO** the workforce so they are being policed (Barely on the Scale!) or
- **FOR** the workforce by managers or safety staff so they don't need to worry about it (Dependent), or
- **BY** the workforce looking out for themselves (Independent) or
- **BY** everyone for mutual benefit (Interdependent).

So what the Bradley curve mainly measures is how much ownership of the Safety system has been taken up by the front-line workforce and how much people look out for others as well as themselves. To some extent it does look at their beliefs (or motives) since in some implementations this is judged by looking for specific behaviours.

So far so good, but is that enough for a robust general purpose tool?

The answer is probably not. One issue is the tone and style. What the Bradley curve uses to define progress are terms which all contain the concept of dependence and a focus on front-line behaviours. As with a lot of classic Health and Safety is about 'eliminating the negative'. What the psychologists have shown in many spheres is that, in the words of the song, 'Accentuating the Positive' is far more effective.

Another potential weakness in using the Bradley Curve terminology is that it is widely acknowledged that people do not normally turn up for work expecting to get hurt. This would indicate that the starting point on the Bradley curve should be the Independent state as people do have a natural tendency to look after their own welfare. Dependence should be seen a backward step!

Whilst Bradley defines just 3 phases most models in commercial have five levels to describe safety culture development. Furthermore teamwork & concern for others have been championed not just in safety but also in quality and environmental management – there are other dimensions to a safety culture that give a far wider and more subtle perspective.

The ideal would seem to be a model which reflects the four elements of a culture, since that's essentially what we're trying to assess, and draws out the ownership and teamwork elements which makes Bradley an appealing, if simplistic, model.

These were the design criteria for the Roscoe-Bizzell model which RyderMarshSharman are now using, The Model looks for evidence of the development of the 4 elements of culture by examining ownership plus other key factors. These are then combined and you see distinct pattern emerging.

For example by pulling together the groups of factors which define an area of interest. For example looking at the Extent, Efficacy and Accuracy factors of the artefacts of the formal safety management system gives an idea of fitness for purpose and often opportunities for incremental improvements can be identified here. It's also crucial to see if "over dependence" has set in and the organisation has become "System obsessed" rather than genuinely concerned for the workforce.

Looking at how productivity and safety are really valued relative to each other is key to understanding the true beliefs driving the culture and in turn is the best indication of how far the enablers of a strong safety culture have developed. Looking at the individual and co-operative Behaviours exhibited will complete the whole picture of the culture.

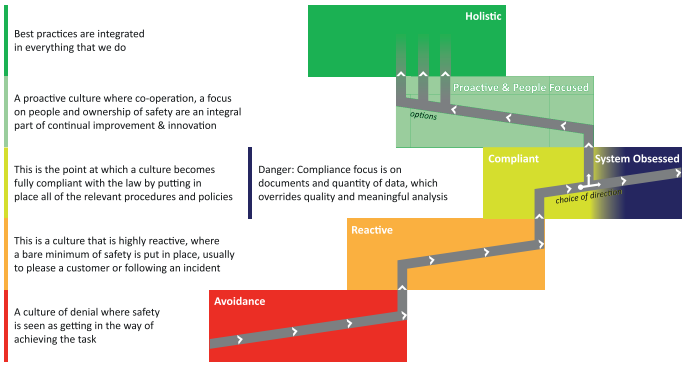

Figure 3 The Cultural Safety™ Map

This modular approach makes for a flexible, practical to administer and useful tool with which one can both get a snapshot of the present and use to pinpoint ideas for how the strategic improvements can be identified, prioritised, planned and implemented.

Taking a view beyond psychology alone makes it the first truly Cultural model and the focus on the key discriminators makes it practical and robust. The combination of simple administration and sophisticated analysis possibilities makes Cultural Safety™ a powerful tool which eclipses the single-focused survey instruments.

RYDERMARSHSHARMAN

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Sustainable building the RE-Fab way

David Simpson MRTPI, Planning Advisor for the Alliance for Sustainable Building Products (ASBP) examines the RE-Fab approach and its potential to allow for the sustainable deconstruction and re-deployment of buildings or their components...

RE-Fab was officially launched at Resource on 4th March 2015. The name RE-Fab is derived from the term 'resource efficient fabrication', an idea conceived by the Alliance for Sustainable Building Products (ASBP) and Ecobond Cymru, the aim of which is to facilitate the delivery of permanent quality buildings that can be deconstructed and either re-deployed as a complete building or as components that can be re-deployed in new buildings.

The approach of RE-Fab is to drive the move towards a more circular approach to construction through the development of sector specific business models for delivery into education, health, military, retail, offices and housing through the use of procurement frameworks.

As its name implies, the RE-Fab concept would involve a more flexible approach to building development as needs and demands change over time, as opposed to the traditional process of delivering a permanent facility of a defined lifespan after which the structure is largely demolished with only limited scope for component re-use and consequent wastage of material and the labour involved in its initial construction. The RE-Fab approach would therefore also require more flexibility in statutory regulations and their application, such as town planning and building control.

This raises a number of fundamental issues for the development process. The current town planning system has to some extent evolved over time in response to changing market conditions insofar as it is now possible to change and adapt the specific use of a building within certain parameters without the need to apply or re-apply for planning permission. For example, some commercial uses within retail areas and high streets can, subject to certain restrictions, be changed between different types of use – shops, banks or building societies, food and leisure uses – where occupancy changes or the premises become redundant. It is also possible, as most householders will know, to add to or extend dwellings and other buildings subject to certain conditions and size restrictions, without the need to apply for planning permission, where these fall within 'permitted development'. Such amendments to the control regime have on the whole increased efficiency and market responsiveness without undermining the equally important function of protecting the environment and interests of other occupants and the community.

Apart from such cases, however, on the whole, planning permission for most types of building must be made for a specific type, size and design firmly defined on a set of scaled drawings showing the development exactly located in relation to its surroundings and adjacent development. Apart from very minor variations to such drawings once approved, any changes must be the subject of a further application and consequent local debate.

As part of the development of the RE-Fab approach, we intend to explore with the relevant government departments, professional bodies and other interested parties, whether the current systems of planning and building control could be made more flexible and responsive to the RE-Fab approach in order to

allow for re-use and reconfiguration of building elements over time without the need to always have to reapply for permission.

For example, let's suppose a school or other institutional building required more space for a specific activity – say an additional classroom block or lecture hall – but that the need for this space might not prove to be permanent. Ideally, it should be possible for the occupants to reconfigure the layout at some point in the future to enable the space to be recreated on another part of the site or development. This could be provided for in the initial approval by defining, say, certain zones within the overall site, which could accommodate the approved structure(s) where these would not materially affect adjoining occupants beyond the impacts initially considered when permission was granted.

"As part of the development of the RE-Fab approach, we intend to explore with the relevant government departments, professional bodies and other interested parties, whether the current systems of planning and building control could be made more flexible and responsive to the RE-Fab approach in order to allow for re-use and reconfiguration of building elements over time without the need to always have to reapply for permission."

Another potential solution might be to explore whether the current concept of an 'outline' planning permission with full details of siting , design, means of access and other matters reserved for subsequent approval could be extended to allow more flexibility and/or time limits within which such matters could be considered or re-submitted.

Alternatively, it might be possible to extend the concept of 'permitted development' as applied to householders and other small scale structures, to cover certain increases or variations in the size of other types of building. The local planning authorities and statutory agencies would of course need to be

David Simpson MRTPI
Planning Advisor

satisfied that any additional flexibility did not undermine the ability and duties of the planning system to safeguard the built environment, amenity and interests of the local community and it will be important to ensure that any recommended amendments to the current system of controls achieves this.

There will no doubt be other potential solutions for achieving such flexibility and these will need to be carefully considered and debated over the coming months. We believe however that the potential benefits of the RE-Fab approach in terms of sustainability, carbon reduction in construction and resulting ability to secure the efficient re-use of building components make the effort well worthwhile. Sustainability and sustainable development are now central to the planning and development process and RE-Fab represents a means of extending and developing this approach even further. ■

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A route to resource efficiency in Europe

Europe's local government organisation CoR, calls time on waste and a route to resource efficiency in the building sector…

Reacting to European Commission proposals, the Committee of the Regions (CoR) raised concerns that "the role of local and regional authorities had been worryingly overlooked" despite their responsibility for local housing development and resource efficiency. Led by Csaba Borboly, the CoRs' opinion adopted earlier this month calls for greater EU investment in overcoming the challenges in developing sustainable buildings and expanding local green infrastructure.

Europe's building sector produces roughly half of all extracted materials and generates about one third of all waste. The Commission review of the life-cycle of building production seeks to improve resource efficiency. President Borboly welcomes the proposals but raised serious concerns: "Improving resource efficiency in the sector is a huge global issue and Europe must lead the way in promoting more efficient use of materials, energy and water consumption, as well as better waste management. The Commission is right to pull together existing policies and set out plans to promote resource efficiency in the building sector".

The development of EU-wide core indicators to measure and boost resource efficiency in the building sector is the cornerstone of the current Commission proposals. The Committee – the assembly of the EU's local and regional representatives – feels that it could boost local economies and make a considerable contribution to the EU's commitment to creating a sustainable economy, but far greater clarity was also needed in defining the guidelines. The EU must also consider the use of traditional methods and materials – such as wood – complemented by new technologies to bolster recycling of construction and demolition waste, and offer improved incentives for clients, contractors and developers in the construction sector. Borboly further commented, "Indicators are not the only way to green the building sector. While sustainable green buildings will save money, to maximise performance they must be supported by robust commissioning, effective management and collaboration between owners and occupiers delivered at the local and regional level."

The Committee recognises the economic, social and environmental potential of setting out European guidelines in order to green the building industry, better manage resources and create new jobs. However, with wide regional disparities and growing pressures on local government funding, the Committee calls on the EU to develop a compensation mechanism to help less developed regions to meet the challenges involved in creating sustainable buildings and expanding green infrastructure in those regions most affected by changes in land use. Rural regions and small and medium-sized towns should be backed with proper investment and research into new technologies through EU funding pots such as Horizon 2020. ■

The CoR draft opinion is available here.

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Conserving our heritage

Heritage Assets

Many towns have the potential for economic revival based on their Heritage assets – listed buildings, historic sites and the wider background provided by conservation areas. Communities often campaign for a landmark building to be listed for its historic interest, but listing is only the start. The greatest challenge is finding ways for that building to earn its keep. Yet with the right uses and presentation, it can be a focal point for wider regeneration and a real asset to the surrounding community.

In recent years, eminent heritage bodies have abandoned the Regency gentry's aversion to "trade" and become more sympathetic to business uses providing the income stream to maintain a listed building or local landmark. Even so, they will still wish to see efforts made to maintain community support and promote wider understanding of the building's significance.

When you need Friends

The initial impetus to retain a landmark building often comes from local enthusiasts organising themselves into a Friends group to support it. This was brought home to me a few years ago when the Friends group for an Edwardian library asked me to prepare an application for Listed Building Consent to restore some of the original signage.

Friends can contribute practical help or attract extra capital funding - but for new services or better facilities rather than to maintain the core service. National Lottery funds and charitable trusts have been important resources for voluntary groups to draw upon, but such funders are rightly reluctant to subsidise the public sector. Most funders now expect to see well-developed business plans to convince them that any rescued building or amenity can survive in the longer term. Any realistic bid will demand collaboration between different interests, to consider what mix of services and attractions will be practical. Some of these may spin off as community projects or social enterprises, attracting other funding streams.

Making Conservation Areas Work

We have had Conservation Areas in our towns for over 40 years, but they have tended to restrict development rather than promote it. Many of the early conservation areas were Georgian squares and the like, where the priority should be maintaining a uniform character. Others are parks and gardens where the presumption should be against cluttering them with extra buildings. Developments in such areas are often exercises in camouflage.

However some now cover commercial town centres, where the need is to balance commercial vitality with maintaining the distinctive character. In such town centres, the key is encouraging variety while respecting the scale and context – otherwise the risk is that a big new block will dominate, whatever its style or colour scheme.

Councils find it easier to apply uniform design policies across the whole borough, but each conservation area needs its own guidelines which identify what is special about it. Better still if they also provide a vision of how it can be improved and nurtured.

Here to Help

Contact Alan Piper for advice on single properties or groups of buildings, and in particular for:

- Building condition surveys.
- Conservation reports.
- Applications for Listed Building Consent or planning permission.
- Feasibility studies and space planning for existing buildings.

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The Biodiversity Duty for Public Authorities

Victoria Bankes Price, Planning Advisor at the Woodland Trust examines the Biodiversity Duty for Public Authorities and highlights how guidance is lacking in useful information...

In addressing The Biodiversity Duty for Public Authorities, just how much guidance does the 'guidance' provide?

"Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity."

This duty was set down in the 'Natural Environment and Rural Communities Act 2006'. But what does it mean for planning authorities? DEFRA published new guidance on the duty last year, replacing the 2011 guidance (though interestingly this is still available on the gov.uk website with no indication that it has been archived or replaced).

The guidance is very brief, comprising primarily of lists without any practical advice or direction. It lists the land authorities may own including school grounds, parks, verges etc, and green infrastructure: sports pitches, golf course and woodlands, it even includes 'the wider countryside' in this definition. This is contrary to Natural England's more strategic definition. By including everything as green infrastructure there is an inevitable feeling that authorities are being set up to fail.

The Woodland Trust's primary concerns are the protection of ancient woodland and the planting of new woodland as part of a landscape scale approach to conservation. The guidance's only reference to tree planting says that authorities can support biodiversity by: using sustainably sourced native tree and plant species in new planting. There is no detail on where trees should be planted or how they should be maintained and monitored. The previous guidance was entirely different, giving a holistic view, detailing the many benefits of woodlands; from their role in uniting communities to their function as a carbon sink. Through case studies, the 2011 guidance gave authorities ideas and inspiration, encouragement to go above and beyond for biodiversity.

The new guidance adds nothing to the duty. One and a half lines state that biodiversity should be promoted in planning and development. It does not set any requirements or best practice examples which puts authorities in a difficult situation, making it harder for them to justify asking for appropriate evidence and surveys.

The guidance fails to add anything to the localism agenda; the duty applies to Parish Councils, legally putting them in a different position to neighbourhood forums. The guidance does not say how the duty could be applied to neighbourhood plans, meaning missing a vital opportunity. Other elements of the guidance are simply misleading. For example in section 3 it states that 'Public authorities can use the indicator "local sites under positive management" to measure their commitments to the duty.' This is unworkable; Natural England is the only public body that can take any responsibility for privately managed sites.

This 'guidance' offers no guidance or direction, it barely elaborates on the Duty let alone going any way to explaining its implementation. In these straitened times with fewer ecologists employed in planning authorities and Natural England increasingly relying on standing advice, the need for guidance is greater than ever, but the void is getting bigger. ■

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Tough But Smart

OKI multifunction printers can help solve the space challenge on site says Andrew Hall, marketing manager Oki Systems UK...

As anyone in the construction business knows, the site office is no place for technology that's fragile and unreliable. It's also no place for large footprint devices that don't earn their keep.

Yet, the building trade is probably one of the most demanding businesses when it comes to printers. They need to be robust and reliable – but they also need to be capable of producing high graphical quality producing top quality maps, plans and drawings at the drop of a hat.

The site office is also a real communications hub – drawings and other documents are being emailed back and forth, yet finding room for laptops, scanners, copiers and printers often means little space for the many contractors and other visitors who come and go during the day.

This is why many businesses are now choosing multifunction printers (MFPs) – devices that bring a wide range of functions such as printing, copying, scanning and faxing together into a single machine. Not only do these fit comfortably in the corner of an office, but they also cut down the paper mountain by providing functions such as scan or fax to email.

There are now also ways to ensure tighter document security by using printers with embedded software. A user can print to any device on the network. However, this will be stored until a card is swiped or password given to confirm their identity and only then will it be printed.

MFPs also help cut energy costs – and incorporate additional energy-saving functionality, including duplex printing as standard. The latest OKI devices including the MC851+ deliver further benefits with their energy-efficient digital LED technology. MFPs built on LED technology have the added bonus of having fewer moving parts which means less wear and tear and exceptional reliability.

However, despite the obvious benefits of investing in these new devices, it can sometimes be difficult to convince managers to spend the money, especially as the economic recovery continues to be slow. This is why many in the industry are looking at alternatives to major capital investment and instead opting for Managed Print Services.

Managed Print Services will help save costs by putting in place, one, all-inclusive ongoing contract which covers printers, supplies, maintenance and support. Perhaps even more valuable will be the consultancy the service provider can offer.

This will begin with an audit of existing printers and contracts, volumes printed and paper size. The services provider will then work with the business to devise a managed print and document management strategy. Tactics will range from a few tweaks, such as ensuring printers are configured and set up correctly – to larger changes such as consolidating printers and implementing new multifunction models. If appropriate, they will then work with the organisation to create a more streamlined document workflow.

The provider will also give advice on the types of devices best suited to different locations – from the office to the building site, taking into account special needs such as A3 and colour printing, the ability to print from mobiles or the need for waterproof and tear-proof documents.

With most construction companies still being prudent, managed print services can help to future-proof their spend, as the print estate can expand or contract according to need. But whatever the economic climate, smarter printing makes sense, especially in the challenging, complex and changeable environment of the construction sector.

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Japanese knotweed control

Tackling and controlling the spread of Japanese knotweed is a problematic issue that cannot be ignored. Here, The Property Care Association Invasive Weed Group have provided essential guidance and advice for developers...

Japanese knotweed was introduced from Japan in 1825 as an ornamental plant. The plant is not unattractive but its rapid annual growth and relentless spread allows it to easily overwhelm other garden plants, and more seriously, has the capacity to cause structural damage.

It is extremely difficult to eradicate after any construction work is complete, so future property owners must not be burdened with this invasive species. It is essential that when developing land impacted by Japanese knotweed, developers are aware of the risks posed to avoid the pitfalls of costly remediation, litigation and resale issues.

Key considerations – where Japanese knotweed is identified

- If Japanese knotweed is on or within 7 metres of any proposed site you should seek specialist advice;
- Once identified, fence-off the knotweed and use signage to warn other site users of the issues with knotweed;
- Do not excavate or use machinery/vehicles on or near to impacted land;
- Do not cut with flails or strimmers. Pull up knotweed or put knotweed material in refuse bins;
- Do not allow any knotweed material to enter water courses;
- Good site hygiene helps avoid the unnecessary spread of Japanese knotweed;
- Swift action offers a greater range of cost-effective remediation options.

Why should you take Japanese knotweed seriously?

The cost of remediation should never be under-estimated, particularly if impacted land is to be excavated and infested soil removed from site. Knotweed growth can be described like 'an iceberg' – the growth below ground rhizomes (roots) which do the damage, often extend more than 2 metres downwards from any visible surface plant growth. This requires large volumes of sub-soil being taken off-site to a registered landfill site licenced to take the waste, which creates extra financial implications for any construction site.

Where Japanese knotweed is growing within, or next to a property being part of a residential development, mortgage lenders demand that a management plan and guaranteed treatment program is implemented. To mitigate against the impact of Japanese knotweed, bringing in the expertise of an invasive weed specialist, as recommended in the Environment Agency Code of Practice, is essential.

The Property Care Association (PCA) Invasive Weed Group is the only truly independent trade body recognised by the Environment Agency (EA) and Royal Institution of Chartered Surveyors where member companies are vetted and assessed.

Selecting an Accredited Invasive Weed Specialist

PCA accredited specialists aim to provide impartial advice evaluated to meet project requirements. Note: Clients are advised to obtain more than one estimate or quotation for the purpose of comparison, but should remember that price is only one factor in selecting a service provider.

All PCA Invasive Weed Control Group members

5 steps to deal with Japanese knotweed where development is proposed:

1. Access for plant and logistics for the removal of knotweed need to be assessed;
2. Excavation of knotweed impacted land should favour on-site solutions such as relocation and/or burial; these must comply with the EA CoP. Removal off-site needs to comply with Waste Management Regulations;
3. Agree a Knotweed Management Plan as recommended by the EA. An outline plan may form the basis of an estimate or quote but should ultimately evaluate methods of remediation against site objectives;
4. Implement the Knotweed Management Plan, treating or removing knotweed-impacted land as appropriate. Ensure that the chosen specialist has suitably qualified staff, that the specialist company is financially able to carry out the work and can offer suitable independent Insurance Backed Guarantees – IBG's;
5. Ensure that all remediation work is fully documented and recorded in order to meet all legal obligations. A PCA accredited specialist will keep their own records and will have procedures in place to make such information available to their clients.

have signed up to a code of ethics and have been independently assessed as being able to conduct and document thorough site assessments, undertaking work compliant with the EA and PCA Code of Practice. Uniquely, members also have the ability to offer independent, insurance backed guarantees.

Knotweed treatment programmes should include management plans to demonstrate that a client's future land use objectives can be met (the PCA Code of Practice acknowledges that herbicide treatment alone is not normally enough to allow development to progress on previously impacted land).

The expertise and credibility of a PCA member enables them to complete contracted excavations or provide experienced technicians to oversee excavation works. The objective of knotweed excavation is to ensure that the optimum volume of land is excavated. Excavating too much is inefficient and costly, while too little will not lead to Knotweed remediation.

Estimates or quotations will normally be provided free of charge when quoting against a specification. However, a fee may be charged if advisory work is involved. Clients are advised to confirm their instructions with the contractor from the outset.

For specific information relating to Japanese knotweed, its identification and the legal issues associated with this invasive weed see EA (https://www.gov.uk/japanese-knotweed-giant-hog-weed-and-other-invasive-plants) and PCA Codes of Practice (CoP). (http://www.property-care.org/professionals/technical-documents/) ■

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The problems caused by Japanese Knotweed and how to deal with them

In the last few years leading experts within the Japanese Knotweed industry working closely with the Royal Institute of Chartered Surveyors, major lenders, building societies, the Property Care Association, insurance underwriters and more recently revised Government regulations have combined to both resolve and assist private and public land owners with solutions to Japanese Knotweed infestations.

The outcome has been the adoption of advice from the RICS which in turn removes the risk identified by lenders and by the Property Care Association Invasive Weed Group members who now have access to 10 year insured treatment policies. This has been followed by Home Office guidance designed to enforce control and to protect property owners from infestation spread from adjoining land i.e. more specific legislation. The guidance explains how Council officers or police can use community protection notices to "stop or prevent" people allowing growth of Japanese Knotweed if it is causing problems. It is important to understand that the public sector are not exempt from this guidance and local government and public sector land has the same obligations as private.

Individuals who ignore control orders will have committed a criminal offence and can be fined up to £2,500, organisations could be fined up to £20,000.

We hope that this will lead to improved collaboration between neighbours, local authorities and miscellaneous land owners where cross boundary issues have historically been difficult to resolve. Composite treatment programmes between all parties is the sensible way forward.

What would we recommend? The first and obvious questions is "Do we need to control or do we prefer to eradicate?"

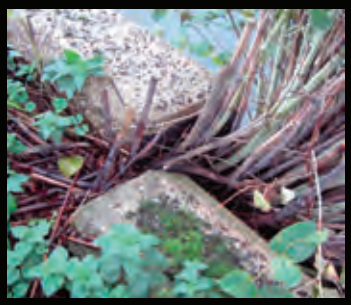
Assuming the answer is to eradicate then as with most things seek professional advice but choose wisely.

If you choose control then compare the cost of continuous control without defined outcome with the induction of professional expertise and peace of mind for at least 10 years.

There is no singular solution to the problem, it is always dependent upon individual circumstances, usually dictated by other constraints from an infestation in a domestic garden through to a redevelopment programme which requires more immediate actions for the sale of land or a redevelopment proposal with a strict timetable for construction implementation. In the last twelve months we have dealt with a small single stand in a front garden through to a major infestation on a multi-million pound superstore retail development.

www.knotweed-uk.com
☎ 0121 366 8916

Example of Japanese Knotweed breaking through a brick wall



Example of Japanese Knotweed destroying a canal side kerb

Does Japanese Knotweed spread?

Example of Japanese Knotweed destroying a car park

Experts within the Japanese Knotweed industry such as ourselves will be compliant with adopted code of practice and can offer options for eradication.

Remember, if you want to know more or simply seek advice then your contact will always be welcomed.

Guide to Japanese Knotweed: If you would like a free copy of our Guide to Japanese Knotweed please email michael@i-v-m.co.uk to request one.

ivm

Invasive Vegetation Management and Treatment Limited

What you should be looking for:

- **Expert site assessment.**
- **A follow up report and proposal in the form of a Japanese Knotweed management plan.**
- **The plan should include consideration of the options and an explanation as to how the recommended action was arrived at.**
- **The plan should include or be accompanied by costs or a programme of costs.**
- **If relevant to circumstances you should be offered an appropriate warranty for the work and the option of an insured guarantee.**
- **If you accept the Japanese Knotweed management plan and associated costs you should be offered a contract to agree the works with the Japanese Knotweed specialist.**

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Reducing energy costs while cutting emissions

Gregor Paterson-Jones, Managing Director of Energy Efficiency at the UK Green Investment Bank gives an overview of how investing in energy efficiency can help reduce costs as well as carbon emissions...

It's hard to believe that the Green Investment Bank has only been in existence for 2 years. In that time, we have backed almost 40 new projects which will mobilise up to £5bn into the UK's green economy.

More importantly, all of these projects will be profitable. Once built, they will generate an annual net profit of between £10m to £15m for taxpayers.

Delivering a UK wide impact, we have financed vital new infrastructure, activated private capital and we are innovating so others can follow.

These themes might well be our key messages, however, the last one of innovating so others can follow is perhaps more applicable when it comes to reducing costs for public services.

We are leading the way in financing ground breaking technologies, helping to create new markets and building inventive financial products on fully commercial terms.

Let me give you 3 examples from the last 2 years, at Westernmost Rough in Yorkshire, we are backing pioneering new offshore wind technology and in London, with TEG Biogas, we are turning the capitals' waste into renewable electricity.

Lastly, in Glasgow, we used our Green Loan to help the city make the switch to low energy street lighting with the cost of repayments covered by their energy savings.

We are working hard to replicate this across the UK as lighting our streets can account for as much as 30% of a local authority's energy consumption.

Adding new technology to older infrastructure is one of the best ways of reducing energy consumption and saving money in the public sector. We can help with building retrofits, onsite generation, industrial processes and infrastructure.

Retrofitting technologies, such as LED lighting, heat exchangers and smart metering, could save UK businesses £3bn to £5bn a year, according to the Carbon Trust, the energy saving advisory body.

This could easily be replicated in the public sector. One of our priority sectors for investment is public sector energy efficiency, especially in the NHS and local authorities where we have a track record of activity.

We have developed an innovative offering with the Green Loan and the Health Sector Energy Efficiency Programme. It allows us to use the full spectrum of financing across debt and equity with the ability to fund long-term projects.

Our experience with Glasgow City Council Green Loan shows local authorities can retrofit their streetlights with LEDs, and using the savings to repay the capital and interest used to finance them, and in certain cases structured with cash left over from day one.

In September, we concluded a deal with De Lage Landen (DLL) to announce a new £50m funding alliance focused on NHS energy efficiency projects.

The first project funded by the alliance is a £7.5m investment into Queen's Medical Centre in Nottingham, part of Nottingham University Hospitals NHS Trust, where £7.5m is being invested to finance the

Gregor Paterson-Jones, Managing Director of Energy EfficiencyUK Green Investment Bank

installation of a suite of energy production and reduction measures.

The project has been developed under the Carbon and Energy Fund (CEF) framework and it will be delivered by the energy services company, Interserve.

As with previous NHS energy efficiency projects, the Trusts and Health Boards that will benefit from the new funding won't need to find the capital upfront. The money saved by reducing their energy bills more than covers the cost of the repayments.

GIB estimates that energy efficiency measures could, across the UK, cut the NHS's current £750m energy bill by up to 20%, saving £150m each year.

Investing in energy efficiency isn't just about cost savings and environmental benefits. Investment in energy efficiency could provide the NHS with more reliable and resilient systems that would significantly reduce costs and operating risks.

Energy efficiency technologies can also be used to improve industrial processes such as pumps, refrigeration and heating, motors and how we use water. They can be used to generate heat and electricity on-site, often using renewable fuel sources. And small changes like a switch to low-energy lighting can add up quickly. We recently helped NCP to change all the light bulbs in their 149 car parks to low energy, saving themselves 65% on their energy bill.

We don't have to look far for examples of good practice like these. And it doesn't have to be large multi-national companies.

We recently helped Bernard Matthews install 179 renewable energy boilers in their turkey farms, helping them towards their target of sustainably generating 100% of their own energy. In the whisky industry we are working with a number of distilleries, helping them lower their costs and reduce their risks. Our first project at Tomatin distillery, just south of Inverness, cut the cost and carbon emissions of producing the single malt that's exported to 40 countries.

As we celebrate our 2-year anniversary, we closed a further round of deals in the energy efficiency market. The first was in the financial sector, a new area for us. Global banking group Citi put in place innovative energy efficiency measures to cut their energy use by 10% at its London data centre with energy efficient cooling units and efficiency improvements to the building's air conditioning system.

I hope these examples have given you the impression that energy efficiency is an option for everyone. Whether you are running an organisation that's big or small I'm confident that we can help you save money, modernise your systems and improve your environmental performance. We stand ready to back these types of projects and can do it in a way that means you do not have any up-front costs with payments made from the savings in energy costs. ■

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David Cameron has an energy problem

Renewable Energy company, RWE Innogy, urges the Prime Minister to maintain his support for wind farms and suggests reforms that would increase efficiency and reduce the number of turbines.

How do you cut the number of wind turbines, reduce their reliance on subsidy and increase the energy produced?

That's the challenge we in the onshore wind industry face. The Prime Minister says people are "fed up" with the number of wind farms and there ought to be no more subsidy in the next parliament.

As it happens, the polls show strong public backing for onshore wind power, but we recognise that some people have an issue with wind farms.

However, there is a way out of the conundrum that will satisfy almost everyone: fewer, more efficient and visually improved turbines.

Like all good businesspeople, we're constantly looking to lower costs and be more efficient in our operations, something that will reduce subsidies over the long-term.

There are two ways in which we can reduce the number of turbines while boosting their output.

Firstly, we want to replace older turbines at existing sites with newer, more efficient models, as we propose to do at our Kirkby Moor wind farm in Cumbria. Secondly, we're looking to introduce slightly larger turbines at new build projects. As a general rule, adding an extra 5 metres of height would boost the energy output of a turbine by over 10%.

Taller turbines can access 'better' wind – that is, wind unaffected by low-level turbulence – and carry bigger blades. That reduces the

Kirkby Moor wind farm – which is now being repowered

Mike Parker, Head of Onshore UK, RWE Innogy UK

number of wind turbines you need at a site, cutting manufacturing costs, but increasing the amount of electricity produced.

Unfortunately, planning precedents in the UK make it difficult for a wind turbine to be installed on land if it is more than 125 metres from base to tip, and it means we can't buy from a standardised set across the European supply chain.

If The Department for Communities and Local Government issued updated guidance to local planning officers, a number of opportunities would open up. By permitting a small increase in height, the UK could reduce the number of turbines at wind farms, see an increase in electricity produced, and reduce its dependence on foreign fossil fuels. The move would also help us reduce costs and therefore subsidies, whilst creating a British wind turbine supply chain that could sell to a wider market across Europe.

"As it happens, the polls show strong public backing for on-shore wind power, but we recognise that some people have an issue with wind farms."

None of this means people will see 'monster turbines' springing up across the country-side. We only need to go a little bit higher, an additional 5 to 10 metres. People will see little discernible visual difference in the size of turbines.

Back in 2012, the Prime Minister told planners to "get off people's backs" or face the consequences. Embracing that reforming approach on wind turbines, as well as in dealing with the backlog of onshore wind applications stuck in the planning system, can deliver the results we all want to see – less subsidy for onshore, less impact from developments and cleaner domestic energy that keeps the lights on.

RWE
The energy to lead

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A future flood resilient built environment

One in 6 homes are now under threat of flooding from rivers, sea and surface water. BRE's Centre for Resilience is calling for a new approach to dealing with the risks along with investment and the development of innovative technologies to improve flood resilience. Director of the Centre, Dr Stephen Garvin reports...

From weather bombs to hurricane Bawbag our climate is becoming ever more unpredictable and the threats to property and infrastructure significant.

Climate change may have significant implications for the built environment, with impacts likely on buildings, energy, transport, ICT and water infrastructure. Analysis from the UK Climate Change Risk Assessment (CCRA) indicates that the built environment will be affected by extreme weather events with flooding as one of the highest order of risks.

With this in mind BRE's Centre for Resilience recently launched its flood resilience policy paper 'A Future Flood Resilient Built Environment' which calls on government to adopt a new approach for tackling flooding which is a risk to over 5 million homes in the UK alone.

In the past it was thought that a flood defence strategy could protect communities and individuals, and their property. Government recently announced £2.3bn spending on improving flood defences – this investment will protect 300,000 homes which is great. We also need a new approach to flood management to reduce the risks further as climate change and increasing urbanisation create greater exposure to flooding. This should be based on resilience where we make space for water and adapt our infrastructure for the inevitability of flooding. Critical factors are investment in research and innovation to support this paradigm shift.

The paper urges the government to think about the rise in surface water flooding, prevalent in urban areas as this requires a more adaptive flood management approach. Surface water management needs to be embedded in the new developments we construct with things like sustainable urban drainage systems, green roofs to decrease water run off as well as localised flood resilient technologies.

"Government recently announced £2.3bn spending on improving flood defences – this investment will protect 300,000 homes which is great."

It raises questions about the thousands of new properties built each year in flood risk areas, increasing the overall exposure and vulnerability of the built environment. There are currently no building regulations and standards that adequately cover the design and construction of resilient buildings. Research and innovation in this area would result in the development of resilient buildings that meet high sustainability standards in other aspects. Current thinking needs to be converted into a series of demonstration and test sites to provide technical solutions that can be adopted by designers and builders.

The paper identifies the lack of effective guidance documents, tools, standards and certification schemes related to the resilience of the built environment, therefore the construction industry does not have the capacity and capability to provide effective resilience solutions for new and existing buildings. Education, training and CPD for designers, builders, product manufacturers and property managers is necessary. Dedicated resources should be put towards education in current courses, through to current managers and directors in the industry.

It explains how research and innovation on the management of water at neighbourhood/community to city level is required. BRE has carried out research on the LifE project which demonstrated potential sustainable master-planning opportunities, but further research and implementation is required to develop viable (economic, financial, social, technical and environmental) solutions. Discussions should take place on the need for a compulsory assessment of flood risk for all buildings in the UK. The opportunity for PLP and other flood resilience measures should be determined.

"There are currently no building regulations and standards that adequately cover the design and construction of resilient buildings."

The aim of the White Paper is to encourage successful approaches that address existing and future developments in the built environment. Resilient solutions can be developed through research and innovation, but there is a need to address policy and practice in order for such solutions to be implemented.

Things are already moving in the financial services sector, who move quickly in response to risks. One area of change is in the insurance sector, from 2015 the current approach, the 'Statement of Principles', will no longer apply and instead a scheme known as 'Flood Re' will be adopted. It will provide a fund to offer people at high flood risk who might otherwise struggle to get affordable flood insurance with cover at a set price. Insurers will put into the fund those high flood risk homes they feel unable to insure themselves, with the premium to cover the flood risk part of the household premium capped.

Customers should not notice any difference and will continue to be insured. However, the changes will result in a need for insurers to better manage their risk, especially for high risk areas. As a result investment in property level protection may need to be considered by owners, and at least better information on where such measures have been installed will be required.

Research by the University of Dundee for the Scottish government involved a survey that made a preliminary assessment of possible societal implications of the insurance change. A particular area of concern expressed by insurance industry representatives is that they have had difficulty to date in accessing information on improvements which may substantially reduce the flood risk for individual properties in a format that would enable those data to be used for commercial purposes.

On this point BRE is working with AXA Insurance and Lexis-Nexis on the difficulty of insurers accessing information on improvements to buildings to manage flood risk. The Property Flood Resilience Database (PFR-d) project is funded by Innovate UK and will result in the means to inform insurers of relevant measures that have been taken.

What the insurance industry is currently not able to take into account is the investment made by the insured and the government on protecting properties through implementing flood resilience. The project will be undertaken to develop a prototype, involving the gathering and sorting of information on Property Level Protection and resilience of buildings, it will develop the framework for the PFR-d (combining existing datasets with the new PFR-d) and will then pilot the process through a trial area in the UK.

The white paper will be further presented to government departments throughout the UK, as well as leading industry organisations. A copy can be found at www.bre.co.uk/resilience. ■

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SuDS at the supermarket

Martin Fairley Research Director at ACO Water Management explains how SuDS have been utilised to achieve effective surface water management and biodiversity...

A collaboration between Leicester City Council, Asda, ISG and ACO Water Management has enabled a first in sustainable urban drainage (SuDs) within a supermarket development. The integrated drainage solution combines proprietary and vegetative systems to achieve effective surface water management, whilst introducing a level of biodiversity never attained before on a retail development.

The project had strict planning guidelines that required two swale inlets to be incorporated onto the site. Working within these guidelines, Asda's site feasibility team and ACO worked closely with Chryse Tinsley, the council's landscape architect, to move away from the more common permeable paving solution, towards a cost-effective engineered system – integrating vegetative elements and proprietary products that effectively manages stormwater on or near the surface.

Sustainable Drainage Systems (SuDS)

SuDS is based on an underlying philosophy designed to counter the evident problems of urbanisation and climate change – where it is becoming increasingly untenable to discharge to an aged, over capacity, centralised sewer treatment infrastructure or to groundwater or a water course. Supermarkets present large, often impermeable areas that shed water to discharge downstream. As such, they are rainwater intensive. In addition, the pollutants introduced from run-off through vehicle operation can have an adverse ecological impact.

SuDS present methodologies and tools to re-examine how surface water run-off is managed – controlling it at site level and effectively decentralising and decoupling any negative components of run-off (volume, rate or quality) from receiving waters and managing on the surface, using natural vegetative and

The Swale installation

manufactured features and products in combination with modelling, engineering, design and creativity that benefits flora, fauna and those who live nearby.

Surface water management for Asda

The car park gradient was set at 1:60 – falling away from the building towards a site boundary positioned swale feature. A high capacity slot drainage system was installed over an approximate 90m length, serving a catchment of over 4000m^2. Specified with shallow drainage inverts of 225mm Ø, the system enables a treatment train to be employed, where surface run-off cascades through a number of treatment components en-route to eventual outfall.

Surface water treatment

The first treatment stage comprises a shallow sub-surface granular stone media, to facilitate filtration and biodegradation as well as usefully slowing the flow of run-off.

With this feature allowing 'on surface' car parking, it's crucial that the aggregate is protected from sediments that might otherwise bind the media. For this, two components are employed for evaluation: a filter device installed in the outlet chambers, designed to filter particulates over 0.5mm; and polystyrene filled sacks that sit in the gully, providing adsorbent properties to which particulates bind.

Water is further converged via four manhole chambers, two of which also serve roof and service yard areas. Three manholes subsequently deliver water to the receiving swale. This necessitated a shallow invert design throughout; making use of the surface gradient of 1:60 – in combination with specifically designed shallow channel outlets.

Continued on page 39...

The National Sewerage Association

Setting the standards

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

National Sewerage Association

The National Sewerage Association
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Filter treatment system

Continued from page 37...

High performance surface water treatment plant

The site's petrol filling station is drained via a conventional oil separator to a detention basin to the north of the main swale. To further treat the potentially high pollution load, a high performance surface water treatment plant was installed. The system used effectively removes the majority of sediments and also treats dissolved metals such as copper and zinc. The system uses proprietary filters to remove and contain pollutants providing a point source for maintenance.

The swales

The ACO SuDS Swale Inlet unit links the proprietary conveyance drainage systems to the swale, and serves to dissipate some of the flow energy. The aesthetically pleasing solution is manufactured from a high strength sustainable material that offers greater durability. The inlet detail also cuts installation time.

The swale itself receives run-off from the roof, the west car park, east car park, service yard, PFS and access road, and is the final conveyance stage to outfall. Chryse Tinsley worked closely with main contractor ISG to ensure the swale was constructed with appropriate contours. The result is a clear meandering pathway for the runoff.

Chryse Tinsley said, "Once developed, the planting regime will provide further opportunities for wildlife and biodiversity. Planting is expected to flourish over the next 12 months and for those using the store the natural features created will provide ambiance and natural habitat. For nearby domestic premises the trees, plants and water also provide a natural dividing line – quelling noise, whilst also providing a natural visual buffer."

The scheme design exploits fully the drainage gradient on site and by combining, in sequence, shallow outlet inverts with granular sub-bases, filter strips, separators, detention basins and swales, a treatment train has been devised with many potential benefits. Water quality will improve through filtration, biodegradation, separation and exposure to sunlight. ■

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Improving performance and agility

The role of business processes

All businesses, in whatever the state of development and maturity will use business processes to deliver services and goods to their customers. These processes evolve over time as companies and public bodies become more mature, complex with embedded fixes for problems in the past and are conducted with implicit rules by front line staff. In the case of public bodies they are constantly impacted by changes in government policy also.

Documenting processes is seen as a painful process, because it takes a long time, involves a wide variety of staff and requires a number of tools to document the outcomes. Businesses are driven to provide this documentation for certification, supporting work instructions and training materials and in some sectors this documentation is a differentiator for winning contracts or demonstrating good public services. However senior management still consider this activity low added value.

In manufacturing it has long been recognised that viewing, reviewing and streamlining processes is the key to improving quality, customer service and reducing costs. A number of key tools and techniques have been developed around this requirement, such as TQM, Six Sigma and the 5S for example. Manufacturing processes tend to be very visible and as a result can be more easily visualised and subsequently transferred into words and diagrams. Also use of visual aids and problem solving techniques is well understood.

Applying these sort of techniques to public bodies and back office functions, such as finance or HR, and creative functions such as engineering or project management is much more difficult. So how do we raise the value of documenting business processes in the mind of senior executives, make the exercise more fulfilling for those engaged in it and speed up the process of documentation and review?

> *A fault in the interpretation of observations, seen everywhere, is to suppose that every event (defect, mistake, accident) is attributable to someone (usually the one closest at hand), or is related to some special event. The fact is that most troubles with service and production lie in the system and not the people.*
> ***Dr. W. Edwards Deming***

Why and what is Modelling?

So why should business managers be interested in process modelling? 'Surely this is only relevant for certifying our operations?' It is fact that most errors and inefficiencies are due to the way work is performed rather than due to the person performing it. By mapping and documenting the business process it is possible to analyse where improvements can be made, identify the correct balance of work and where to apply controls. It is also a fact that the longer the time it has been since businesses have been reviewed, the less streamlined and poor performing they are.

> *Service companies go from an EBITDA of 1.3% to 37%* as they become process-driven.*
> ***SPI Services Maturity Model 2013***

The statistics are that after 18 months there is 25% waste introduced into a process and within 5 years this has grown to 70%.

So how would each management level within a business use a process map? They all need different views of the business and a flat single level flow chart of the end to end business process will not provide this. For example the C band executives will require a very high level overview of the entire business showing how the Core business processes deliver the business and how they contribute to the strategy. If the Balanced Scorecard is used to articulate the strategy, then this will require targets to be set for the key business processes.

Middle management will require a more detailed drill down showing handovers between functions and how the cross-functional needs of business delivery to customers can be in conflict with departmental objectives or how poor handovers can affect downstream performance. They also need to understand how business policy as applied to their processes impacts performance.

This diagram shows how the process knowledge repository feeds all these initiatives.

Front Line staff require a fully detailed step-by-step, model of the process, showing the tasks, who does the work and how it should be done and how to get to work instructions, particularly for more periodic processes that are not day to day activities.

Making the Business Process Model the Centre of Day-to-Day Business

Once the business model is complete, it should be deployed for access by the entire business. By deploying the model to all staff a number of objectives can be achieved including knowledge transfer, continuous process improvement and increased business agility. The key to success will be the reuse of that work. There are many opportunities to do this namely:

- Organisational design, such as introducing new departments.
- Due diligence over mergers and acquisitions.
- Setting realistic process performance measures.
- Identifying role requirements, supporting competency definition and resource planning.
- Supporting business improvement initiatives and the application of technology.
- Supporting internal audits for security and segregation of duties, and quality certification such as ISO.
- Training of staff who are new hires or promotions.

This represents a significant benefit to the business and therefore should not be missed. The key to ensuring this, is gaining ownership of the model within the senior executive and functional departmental management and demonstrating immediate benefit.

Gaining ownership will only be achieved by proving the benefit of the approach to those asked to own both processes and outcomes. For process owners to effectively use the business process model on a day-to-day basis, they will need demonstrable benefits of its effectiveness. By designing processes within the model business managers can apply time and cost so that the cost of delivery can be assessed; this might be related to rework loops and the benefit of avoiding them or skill of the person undertaking the activity. If the model is aligned to business KPI's realistic targets can be set to drive improvements and the removal of 'waste'; providing the source for 'lean' initiatives.

Managers must be trained in how to use the model to successfully facilitate process review and internal organisational redesign, i.e. such as moving jobs between incumbents and removing jobs through the application of technology.

Making the model central to training and induction is much easier; by using the model as a 'how to' guide for each business role, enabling access through the companies intranet leading to more in depth materials such as written work instructions or SOP's, or videos of the same. Rapid analysis of roles and job scope is aided by the 'where used' report applied to the business role.

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Planning online – streamlining the process

Southwark Council explain the move from a paper-based planning application process to an online version in an attempt to reduce paper waste and to streamline processes...

Southwark Council has replaced its online planning system with Idox's Public Access system, a more robust planning portal, widely used by councils across the country.

The new system will allow the council to improve the way it interacts with developers, residents and stakeholders on issues that affect them.

"Like many local authorities, cost and efficiency is important to us," says Dennis Sangweme, Group Manager – Validation & Fast Track. "We have implemented electronic processes on the majority of the 5000+ planning applications received per year, from multi-million pound regeneration and development schemes to residents' own home improvements."

The system has a simple interface, making it easy for users to submit their planning applications online. Entries are automatically loaded to an online 'back office' so updates to application data or documents are available online as soon as they occur. It also provides a standard set of search facilities so that users can search for planning applications as far back as 1996.

"The system has already made it easier and more efficient to process around 600 comments the council gets each week from residents and other interested parties on a variety of planning applications" says Dennis. "It also complements work that has already been done to make it easier for people to keep track of developments in their neighbourhoods, such as Southwark Maps.

"This allows for greater accessibility and transparency as applications and comments are instantly published on the website for the public to view. Making it easier to view and comment on applications is essential to ensure that people feel informed and are able to get involved in decisions that affect their neighbourhoods."

The previous paper-based process generated up to two million printed pages per year which is time consuming, not environmentally friendly and expensive.

"Our move to an electronic system has changed the way we handle planning applications and it has allowed us as a council to work better and faster," says Dennis.

"This new way of working will not impact those applying for a planning application as the registration, validation, consultation, assessment and decision making process will stay the same.

"The fundamental difference is that processing of planning applications will be done electronically instead of printing acres of paper at a huge cost to the tax payer."

Southwark Council's move to an online system is not surprising. Today, more than 82 per cent of adults in the UK are online. Completing transactions online has become second nature. While the private sector now primarily delivers services online, the use of digital service platforms in the public sector lags far behind.

"We have big plans with regards to the way people consume and respond to local authority information," says Dennis.

"For example, we are working on a free mobile app for smartphones and tablets to allow users to view application information and submit comments on the go. The app will be developed as part of the Council's ongoing Customer Access Programme and MySouthwark to link directly to planning applications on the new system to allow users to view and submit comments on applications.

"In addition, neighbourhood consultation letters, site notices and press notices have been revised and

Dennis Sangweme, Group Manager – Validation and Fast Track at Southwark Council

abbreviated to link to the Council's Idox PA platform to improve visibility and accessibility of notices."

"Making it easier to view and comment on applications is essential to ensure that people feel informed and are able to get involved in decisions that affect their neighbourhoods."

Residents who do not have access to the internet are encouraged to use facilities at their local libraries and dedicated 'My Southwark Service Points' to access online services if needed. Postal comments, when received, are processed into the new system.

As a council, Southwark has already achieved thousands of pounds in savings by moving towards digital service delivery by default in line with the government drive.

"However this is not just about saving money," says Dennis. "The public increasingly expects to access services quickly and conveniently at times and in ways that suit them. It's not a matter of leaving people behind but rather, using digital technology to deliver better services at lower costs." ■

Southwark Council
www.southwark.gov.uk
www.twitter.com/lb_southwark

Time to address the skills shortage

Julia Evans, Chief Executive at BSRIA examines the current construction skills shortage and urges action to help promote the industry as an attractive career path...

As the influence of the recession begins to fade and the construction industry sees a return to growth, all the things that beset us, such as having too many staff, are now reversing and the hunt for talent is on.

Recent figures from the CITB report that 200,000 more workers will be needed in the construction industry by 2020. The Royal Academy of Engineering reported in 2012, during a period of recession, the need for the UK to increase the number of science, technology and maths (STEM) graduates by 100,000 each year just to maintain the status quo. So where are all these people going to come from?

Total construction employment is expected to hit 2.74 million by 2019 which is slightly less than the number employed pre-recession in 2008 when 2.86 million were employed. So what has happened to all the people that used to work in construction, and are they likely to return?

We have only to cast our minds back to the height of the recession and the precipitate loss of many workers, including apprentices who were part way through their courses, to understand that poor practice in difficult times has done the industry few favours.

Nevertheless, handling the recruitment of new staff is an issue that can no longer be ignored. So how can companies now seeking that elusive new colleague do their best to persuade the next generation that the construction industry is a good viable long term career move?

Julia Evans, Chief Executive at BSRIA

The National Union of Students has set up a commission to examine the Future of Work. The NUS went out to ask 4000 students and recent graduates about their view of the world of work. It revealed some salutary and concerning findings.

About a third were pessimistic about the job market which is an irony given the situation of impending skill shortages. Respondents saw employers to be at the heart of the issue (not government) and particularly highlighted issues of low pay and no pay (as in internships) being key. The other important factor was the 'catch 22' conundrum of employers wanting work experience; half of the respondents asked saw that absence of experience was a huge barrier to employment. And yet, as we know, whilst there are many excellent work experience schemes available, the majority of employers do not offer this kind of opportunity.

Although the young people surveyed by the NUS didn't see government as being the driver for change, many employers do. May 2015 sees our opportunity to choose the next government. All the main political parties have education and training as a key plank in their manifestos. Central to education policy is the approach taken to apprentices – always a part of the foundation of construction employment.

Policies do not differ greatly between the parties in this regard. All see apprenticeships as being a key part of future economic success. However, apprenticeships are now becoming a key issue with debate around gross numbers, levels of investment and interestingly, even producing a whiff of elitism.

Whilst no one would argue against the drive to improve overall educational standards, the idea that apprenticeships are open to those who 'get the grades' (Labour), suggests that those for whom vocational training is a more appropriate avenue to pursue than A levels or a degree, may find themselves shut out of the course which will lead them to a sound career. Similarly, current government proposals (Tory and LibDem) about change to apprenticeship schemes contain plans to change the point at which employer funding becomes available. This is proposed to alter from the beginning to the end of a course. Whilst this change is not so much of a problem for larger employers, for many SME employers (which are where many apprentices receive their training) the impact that this change will have on cash flow may be unsupportable leading to reductions in apprenticeship numbers.

So where does all this leave us? Employers are clearly in the driving seat as far as young people go so let's not wait for government to lead. If we want to attract the best talent we need to look to our methods of recruitment, our promotion of the changing nature of construction industry, packages of benefits and the scope of training to ensure we give ourselves the best chance of getting the right people into our businesses. We need to consider party policy and vote accordingly. But most of all we need to get on with addressing this issue now and grasp the situation. After all, compared with the experiences of the recession, this is a good problem to have. ■

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Overriding our Unconscious Bias

Elspeth Burrage, National Chairman of the Association of Women in Property explains what Unconscious Bias is, and how it can be overcome...

Last year researchers at the University of Illinois found that people subconsciously assume that hurricanes with female names are less dangerous than the male variety, so they take fewer precautions. The result — higher death rates. Is this the ultimate, most perverse case of Unconscious Bias?

Unconscious Bias (UB) is possibly the buzz term for 2015, but actually it goes back a long way and is arguably one of the biggest culprits behind gender, ethnicity and 'class' imbalance. We are all conditioned to think and respond in a certain way, whether that is based on implicit prejudice, a feeling of familiarity, preconceptions, appearance and so on. UB applies to all of us, hence it is one of the most important issues the property and construction industry should grasp and deal with.

UB is defined as a psychological phenomenon. We all have psychological reasons as to why and where we gain our individual biases that affect our behaviour, thought processes and decision-making. There are different forms of UB, including implicit prejudice; a gravitation towards the 'safe' or familiar; stereotyping based on, for example, preconceptions of race or gender; assumptions about someone, based on their physical appearance; 'covering' ie when people try to disguise part of who they are, for example their class, sexual orientation, a medical issue; and being 'in group' or 'out group', for example, straight or gay, male or female, Christian or Muslim, leading to overt or unconscious segregation.

When faced with this barrage of psychological stumbling blocks, it's surprising any of us make any progress at all. My company, DTZ, with Women in Property under the Mid Career Taskforce banner, is rolling out a series of workshops on UB for our own staff, members and guests. We get involved in role-play, and discussion, to demonstrate how we all succumb to UB and how we can acknowledge and override it.

So here's a starter for ten. Be realistic, rather than attempting fundamental change, start by recognising and managing your biases, for example in appraisals and interviews. Look for the facts, be open to seeing and hearing what's there and don't depend on 'rule of thumb'. Add value by working with colleagues to find ways to identify and calibrate skills, ensuring equity above difference. Instead of relying on the usual suspects, give opportunities to others to present ideas, lead meetings and speak at conferences. Recognise how you're thinking about a situation – is your decision based on rationale, or feelings?

Let me finish with an anecdote told by a colleague who, very recently, attended a discussion on diversity. As they went through the usual 'Housekeeping' they were treated to the Fire Alarm scenario, with the following explanation from the host, "No fire alarm is expected but if there is one, a female voice will signify that this is not a real fire and therefore no evacuation is necessary, however a male voice...". Is there a hurricane heading this way? ■

Elspeth Burrage
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The NBS BIM Toolkit evolution

Stephen Hamil, Director of Design and Innovation at the NBS, outlines how the NBS BIM Toolkit has been received around the country and what happens next...

Back in 2010, I remember listening to Paul Morrell, the then chief construction adviser, present the government's Construction Strategy and being inspired by the radical vision of the part Building Information Modelling (BIM) would play in transforming the construction industry.

To think that now, nearly four years on, NBS is in a position to complete Level 2 BIM, and in advance of the government's 2016 deadline for its use on public sector projects, is very exciting.

In the last issue of Planning and Building Control Today, I explained how the necessary pieces in the Level 2 BIM jigsaw are moving into place, with the development and impending 'soft launch' of the NBS BIM Toolkit.

To recap, the Toolkit is a web-based resource, tailor-made to guide users through the construction process. At the heart of the project is a standardised and digitally-enabled classification system coupled with a level-of-definition reference library and digital plan of work tool.

Combined, these have the power to transform the delivery of construction projects for all disciplines and across all scales of projects; from large infrastructure schemes to small, domestic scale works.

Given the confusion that still remains over what Level 2 BIM actually means or constitutes, the completion of such a defining suite of documents is critical to further BIM adoption and the enhanced building design and delivery this will bring.

The NBS-led team has been working hard to ensure the BIM Toolkit is easy to use and offers step-by-step support to define, manage and verify responsibility for information development and delivery at each stage of the asset lifecycle.

Whilst the NBS BIM Toolkit is being delivered by NBS in conjunction with colleagues from BIM Academy, BDP, Laing O'Rourke, Mott MacDonald, Microsoft, Newcastle University and RICS, its development has benefitted from input from a wide range of construction industry professionals.

Over the first few months of the project, the team consulted with architects, clients, contractors, engineers, manufacturers and facility managers and latterly, over the last month, the NBS BIM Toolkit has been taken on the road around the UK in association with the UK Government's BIM Task Group's BIM Hubs.

In addition to demonstrations at major industry events such as Ecobuild, these free events have provided construction professionals in all regions of the UK with an early opportunity to preview and comment on the Toolkit.

Feedback has been invaluable and a number of recurring themes have emerged. For example, it is clear that Level 2 BIM is not just about design but managing the entire information set. Yes, graphical representations of doors or boilers are important, but equally so is the documentation of a solid brief, the clear allocation of tasks and responsibilities and any results of the consultation process.

The importance of the early stages (0 & 1) in the new plan of work has also been made clear; making sure you are thinking strategically before thinking about the products.

Above all though, these various events have made the team more certain than ever that the Toolkit has the very real potential to transform the procurement of buildings and infrastructure by defining and testing the BIM data required at each stage of the project.

"Whilst the NBS BIM Toolkit is being delivered by NBS in conjunction with colleagues from BIM Academy, BDP, Laing O'Rourke, Mott MacDonald, Microsoft, Newcastle University and RICS, its development has benefitted from input from a wide range of construction industry professionals."

With this in mind, we are very excited about moving the NBS BIM Toolkit website from private beta to public beta, at which time the industry can actually start using the Toolkit on its Level 2 BIM projects.

This 'soft launch' of the Toolkit will happen on April 8th to coincide with BIM Show Live, one of the UK's leading BIM events, to be held in Manchester.

In addition to a wealth of technical content, users will be able to access a support area that will include a series of articles providing expert advice on a range of relevant subjects such as; the concept behind Level 2 BIM, the levels of definition for construction objects and how to develop employer's information requirements.

Free-to-use, the NBS BIM Toolkit will empower all parts of the construction industry.

Clients and managers of assets will be able to comprehensively define information requirements to ensure their needs are met and better project outcomes are guaranteed.

Design and construction teams will be able to assemble a team with clearly assigned roles and responsibilities to work collaboratively on their Level 2 BIM projects.

Finally, manufacturers will be able to provide digital information quickly and easily to specifiers on thousands of construction projects.

In summary, by proving the answer to achieving Level 2 BIM, the Toolkit will immediately start solving some of the problems the construction industry has struggled to overcome by moving it from an analogue system of working into a digital world.

It will also ensure that the UK construction industry capitalises on the clarity of its public sector vision for BIM. A unique vision that is increasingly being followed by the private sector and a digital approach that will put the UK in a position of worldwide leadership. ■

To create your first BIM Toolkit project, go to www.theNBS.com/BIMToolkit

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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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A JOURNEY TO BIM MODEL VALIDATION

by Rob Jackson of Bond Bryan Architects

Early steps towards validation

In early 2013 Bond Bryan Architects invested in a single network license of Solibri Model Checker. We had recognised that validation of information was going to be critical to the future of Building Information Modelling (BIM) in both our own business and the industry.

We began by testing a few of our models and quickly realised that we needed to do more work implementing standards within our models before we could develop a viable model checking approach.

So during the summer of 2013 we spent a lot of time focussed on the integration of emerging industry standards in our authoring tool. At the same time the BIM overlay to the RIBA Plan of Work became available (which was subsequently published as the RIBA Plan of Work 2013).

So in September 2013 we introduced new authoring tool templates to our staff for use on live projects. These templates focussed on greater data integration and moved away from creating and exporting native data fields to using Industry Foundation Classes (IFC) data, which is covered by ISO 16739:2013. Moving to IFC also allowed us to align our data deliverables with COBie-UK-2012. COBie is a subset of IFC and is the non-graphical data deliverable for all UK Government projects from April 6th 2016 and is at the core of Solibri Model Checker (and its free accompanying viewer). So we knew that aligning with open international standards would provide us with the best methodology for validating our data and subsequently using it for other workflows.

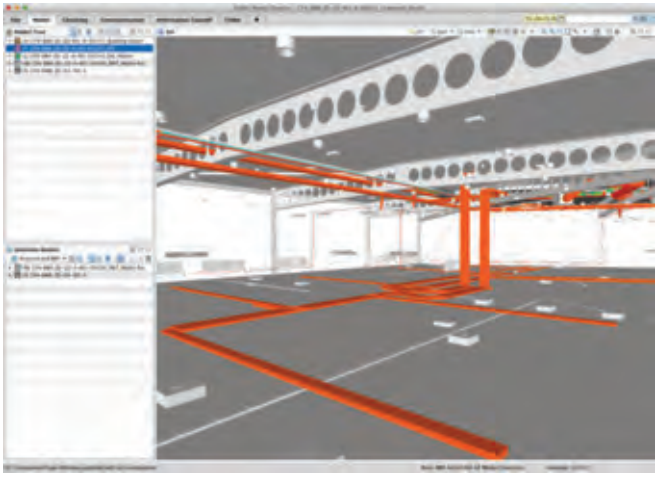
Building validation workflows

So six months after introducing our new workflows we were starting to get better models. With this improvement in our authored models, it allowed us to return to Solibri and work on developing a matching set of rules to the authored model standards. Having spent a long time understanding

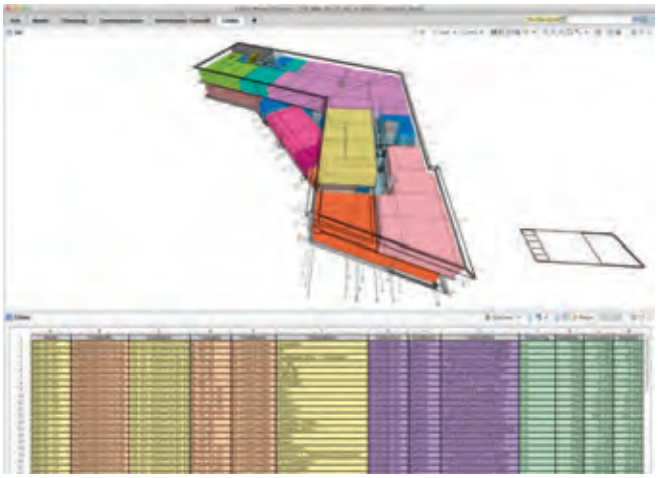
Workflow at Bond Bryan

the data we were creating building a set of rules was more straightforward. Our whole approach has been built around the RIBA Plan of Work 2013, BS1192:2007 (and subsequently PAS1192-2:2013) and COBie-UK-2012. As a practice we are keen to integrate as much of COBie as possible, irrespective of whether we are asked for it. We have always believed that standard BIM deliverables should become the 'new norm' over time rather than something that is additional to our services.

Whilst we were building our model validation rules for Solibri, a new version of our authoring tool, Graphisoft ArchiCAD was released. This version allowed us to automate much of our data creation through mapping. Changes were also made to make the workflows simpler for staff. This immediately offered the opportunity to integrate more information as standard. This meant that the validation process could be more specific and therefore more robust. So in September 2014 we finally rolled out our company rulesets for Solibri Model Checker to be used in anger on our new live projects.



Validating building services



Producing COBie output showing data and visualisation

The rulesets

Built to align with industry standards but coupled with a clear understanding of what data we should produce at each stage, the rulesets are split for each RIBA workstage. This means the user can focus solely on the set of rules they are required to pass at each stage. As much is automated, many of these rules will be passed with very little effort. We actually split out a lot of the out-of-the-box rules to create a longer list. This meant that users would see that they had passed an awful lot and not be daunted by the fact that a rule had failed because one aspect had failed within a single rule. Splitting the rules also allowed us to make the descriptions simpler and clearer and add information about where to fix the rules if they do fail. The advantage of this approach also means that a clear report can be provided to others about what has and hasn't passed.

We now have a number of projects that have implemented our rules. Instantly users are surprised at the power of the issues Solibri picks up. Things they thought were thoroughly checked manually throw up issues. It becomes a positive challenge to resolve these issues rather than a chore. As we have used the rules more we have realised that further rules need to be added or existing ones tweaked.

The benefits

Clearly model checking has obvious benefits to the quality of traditional outputs. Ensuring that spaces don't have duplicate numbers means there is no chance of duplicated Room Data Sheets and it's a similar story for duplicated window and door numbers. The benefit of this becomes more pronounced on bigger or more complex projects. So our outputs are more reliable compared to manual processes.

We are also using Solibri to check our 3-dimensional models against others models such as Structure and Building Services. These models are being used in coordination meetings to discuss the resolution of issues. This is allowing issues to be resolved faster and removing the need to resolve these issues on site. This reduction in risk has an obvious cost benefit to contractors and ultimately to clients.

However the benefits of integrating data and being able to validate it is that our information is more reliable for others to use. It can be used for COBie but it can also be used to produce Information Take-off. Our project models have become business development tools in their own right to some sceptical contractors. Many are amazed about the quality of the information we are now starting to output and they are realising what our approach can bring to make their lives easier.

Next steps

So now in 2015 we have 3 licenses (with more planned) and are now only a year away from 'BIM Level 2' becoming required on all publicly procured projects. As a practice we are already seeing projects requiring COBie and we started our first projects, which formally required COBie in January 2015. Our model rulesets and Solibri's COBie functionality are making this process relatively straightforward. Live projects are providing more valuable learning experiences and our processes will continue to evolve.

2015 will also see the publication of the Digital Plan of Work and updated Uniclass classification system. Both these will need us to develop our approach further and we also plan to introduce more checking for the extended requirements of BS1192-4:2014, NRM1 and the NBS BIM Object Standard. So over the summer we plan to further develop both our authoring approach and our matching validation process. September 2015 will be another step forward and the opportunity to further improve our offering.

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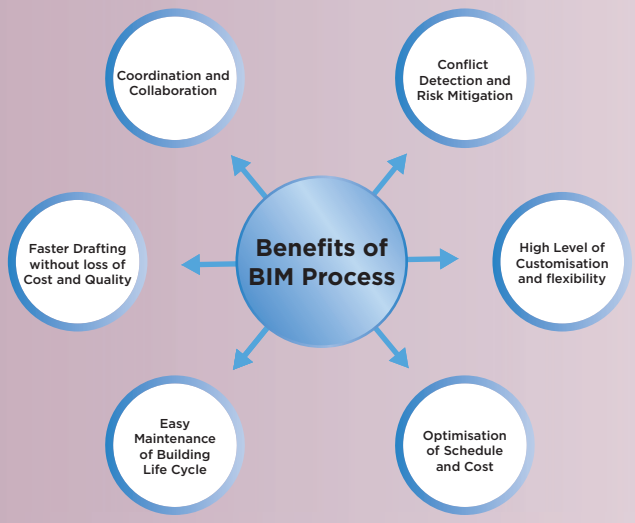

What is BIM?

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

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

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

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BIM: the story so far

Anthony Burd, Head of Market Development and Stephanie Kosandiak, Lead Programme Manager for Construction at BSI, outline the growing BIM landscape...

The architecture, engineering and construction (AEC) industry previously relied on CAD and marked-up drawings to build. With the need to improve efficiency and reduce costs across the process, BIM software has filled the gap and shown that it can do both. The creation of a virtual 3D map (embedded with all the relevant data) of a building using digital technology, means that an accurate model can be constructed. This has major uses for everyone involved from the planning, design, construction and facility management aspects of the build, where all elements can be integrated and viewed by the architects, engineers and constructors.

Building in a simulated environment means that unforeseen issues can be corrected before any physical work can begin. As traditional methods have dominated the AEC industry for such a long time, this shift in process requires a shift in perception and working too. 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. Stakeholders do not need to wait as long as they once had to, to see the implemented changes and can see what the final project will look like with demos and walkthroughs.

BIM is effectively changing the face of construction and is recognized not just by industry but the government as a key tool. As older methods eventually become obsolete, the AEC industry will have to adapt. In anticipation of the importance of BIM, BSI has developed a full BIM suite of standards to support the use of BIM.

The key BIM standards

BS 1192:2007 *Collaborative production of architectural, engineering and construction information. Code of practice*. The standard establishes the methodology for managing the production, distribution and quality of construction information, including that generated by CAD systems, using a disciplined process for collaboration and a specified naming policy.

PAS 1192-2:2013 *Specification for information management for the capital/delivery phase of construction projects using building information modelling.* The requirements within PAS 1192-2 build on the existing code of practice for the collaborative production of architectural, engineering and construction information, defined within BS 1192:2007. It focuses specifically on project delivery, where the majority of graphical data, non-graphical data and documents, known collectively as the Project Information Model (PIM), are accumulated from design and construction activities.

PAS 1192-3 is the partner to **PAS 1192-2**, and focuses on the operational phase of assets irrespective of whether these were commissioned through direct capital works, acquired through transfer of ownership or already existed in an asset portfolio. Like PAS 1192-2, PAS 1192-3 applies to both building and infrastructure assets.

BS 1192-4:2014 *Collaborative production of information Part 4: Fulfilling employers information exchange requirements using COBie – Code of practice COBie (Construction Operations Building Information Exchange)*, is required on all Government construction projects where information must flow into portfolio, asset planning and facility maintenance tools. BS 1192-4 provides users with recommendations on how to use COBie to structure information required for the operation of an asset or facility during the construction process, supporting the processes outlined in PAS 1192-2 and PAS 1192-3.

BS 7000-4:2013 *Design Management Systems: Guide to managing design in construction.* This BIS funded revision has been radically updated to take into account the development of BIM within the construction industry. It replaces **BS 7000-4:1996**.

BS 8541 Series of Library Objects for architecture, engineering and construction – provides construction product manufacturers and suppliers with guidance on how to provide product information for inclusion in Building Information Models. It comprises **BS 8541-1:2012** *Identification and classification,* **BS 8451-3:2012** *Shape and measurement* and **BS 8541-4:2012** *Attributes for specification and assessment.*

Upcoming BIM standards

There are several standards that work in synergy with the **BS 1192** suite of standards. The key ones expected in 2015 are: **BS 8541-5 and BS 8541-6**. As BIM Level 2 becomes more widely adopted in the UK, BSI is adding two new British Standards to the BS 8541 Library Object series in early 2015. They provide best practice recommendations on how to develop library objects for assemblies and product and facility declarations.

- **BS 8541-5** *Library objects for architecture, engineering and construction: Assemblies* (on the sharing of sub-models representing combinations of components and spaces covering naming, classification and nesting) and;

- **BS 8541-6** *Library Objects for architecture, engineering and construction: Product and facility declarations* – Code of practice (on the sharing of data expected from product declarations, labelling and environmental tables) will be published in February or March 2015.

Lead Technical author, Nick Nisbet, explains, "Repeatable rooms and prefabricated modules, on the one hand, and the Construction Products Regulation

and energy performance reporting on the other, are issues of growing importance in the construction sector. These codes of practice build on the earlier parts of the series to help the industry achieve higher quality and accuracy when exchanging product (and facility) information."

BS 8536:2010 *Facility Management briefing is being revised as Facility Management briefing for design and construction – Code of practice*, to take into account current industry best practices in briefing and the emergence of the soft landings process and BIM. The revised standard will give recommendations for design and construction to ensure that design takes account of the expected performance of the asset/facility in use over its planned operational life.

BS 8536:2015 will introduce the integration of the principles of the soft landings process, combined with effective information management and the requirements for post-occupancy evaluation (POE) to strengthen the link between asset/facility owners, operators, and their facility managers and the design and construction team to assure performance of the design and the operational asset/facility in all aspects.

The standard cross-references information requirements associated with the mandated documents for BIM Level 2 PAS 1192-2, PAS 1192-3 and BS 1192-4 and is expected to publish in July 2015.

BS 8536:2015 is intended for use by individuals and organizations preparing or contributing to design, construction and operations, in both the public and private sectors, including owners refurbishing an existing asset/facility, organizations procuring a new asset/facility and the designers, constructors, subcontractors, operators, operations teams, facility managers and other specialists engaged in such activities.

PAS 1192-5. The UK BIM Task Group's "Security Working Group" announced late last year at "ICE BIM 2014: Business as Usual" Conference in London that "PAS 1192-5: Specification for security-minded building information management, digital built environments and smart asset management", is currently in development.

The PAS will outline a risk assessment process to determine the sensitivity of information already held, or which will be acquired during the course of a project, and identify appropriate, proportionate security requirements for BIM collaboration which should be applied during all phases of the lifecycle of an asset, i.e. concept, design, construction, operation and disposal. It will then address the steps required to assist in creating and cultivating an appropriate security mind-set, and the secure culture necessary to enable business to unlock new and more efficient processes and collaborative ways of working.

The intended audience for this PAS includes organisations and individuals responsible for the procurement, design, construction, delivery, operation and maintenance of buildings and infrastructure assets. Although specifically targeted at the use of Level 2 BIM, the requirements will provide a foundation to support the evolution of future digital built environments and will contribute to smart asset management.

The standard is expected to publish in quarter two in 2015. ■

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The Lloyd's Register Route
to BIM Level 2 Accreditations

Lloyd's Register Accreditation to BIM Level 2 is the provision of a public statement of the credibility of BIM business practice and effective performance of the certified organisation.

The first step towards Lloyd's Register BIM Level 2 accreditation is the gap analysis. The gap analysis represents a high-level assessment undertaken to examine not only the overall status of the BIM processes, systems and competencies against the requirements of PAS 1192 and associated documents, but also business good practice and collaborative culture. The objective of the gap analysis is to identify any major gaps against the standard and scheme principles, and report on any identified weaknesses. The purpose of the assessment at this stage is not to undertake a detailed analysis of all different elements of the BIM related systems, but to establish an overview of the whole system, identifying areas for improvement which present most risk to the achievement of the organisation's BIM-compliant practices and objectives.

The gap analysis is typically performed through discussions with key reports. The audit technique adopted for this process provides the freedom for the auditee to explain their management systems without concerning themselves with how this meets the requirements of PAS 1192 and associated documents and scheme requirements. This approach is based upon the view that it is more important that interviewees use the time to explain how they do their job within their existing BIM related system, without worrying about 'another' specification. Using a Socratic approach, the assessment team promotes a challenging discussion around key issues, which teases out the important areas for change and often helps the organisation understand their own system more fully. The challenge for the assessment team is to relate the information gleaned in these discussions to the requirements of the scheme requirements, reflecting the context within which the organisation is working and providing relevant feedback.

On the conclusion of the gap analysis, which typically represents 1 day, a verbal report of the findings is presented in a closing meeting to the management team of the organisation under assessment. This is followed by a detailed report as to findings, classified according to the seriousness of the weakness identified. Whilst the discussion may start around the items identified requiring improvement, the key focus is on how the organisation can explore options to make changes, taking them further along the road to an effective BIM Level 2 compliant system.

The next step – certification assessment – is performed when the organisation seeking accreditation is satisfied they have addressed the findings, identified during the gap analysis, classified as major deficiencies and have made significant progress on an action plan to close out the findings classified as minor deficiencies.

The certification assessment will draw on the output of the gap analysis and the progress made, and will seek evidence that processes are in place addressing all areas of the scheme requirements. This more detailed assessment represents a verification, not only that all major issues identified during the gap analysis have been addressed, but also that the systems processes and competencies described during the gap analysis have been efficiently and effectively implemented. An important area examined at this stage is the communication within the organisation and extending to its consultants and subcontractors, such that all key contributory resource understand the scheme requirements and are themselves fully compliant.

Experience of the implementation of a number of accreditation schemes that Lloyd's Register currently operate has shown that added value to the assessment process is best delivered through the adoption of the following assessment principles:

- Seeking Evidence of Conformity rather than looking for non-compliance, represents the most positive approach to assessment and provides better value add to the organisation and individuals being assessed whilst additionally providing assurance that weakness in the system will be found.
- Socratic Questioning provoking discussion and debate and assisting clients to identify the best practices that may be relevant and applicable to their circumstances.
- Domain Sector Expertise – Assessors assigned based upon their operational knowledge and experience in the domain which represents the core business of the client organisation. Ensuring that the assessors "speak the same language" are empathetic to the concerns and issues of the client and have a broad awareness of the risks to which the sector is exposed and are therefore best placed to add value to the assessment process.

The achievement of BIM Level 2 accreditation requires effort and management commitment. It is a step along the BIM good practice journey and reflects that organisations have met or exceeded the requirements of the Lloyd's Register BIM Level 2 Accreditation Scheme. To retain the accreditation requires a sustained approach to improvement and management commitment which must be evidenced during the surveillance programme which is undertaken during the three year accreditation validity. Failure to demonstrate such ongoing commitment may result in accreditation suspension or withdrawal – a measure of the effectiveness of the accreditation scheme

The Lloyd's Register BIM level 2 assessment process incorporates PAS 1192 and associated documents but additionally evaluates wider performance of the business in order to support its BIM related corporate goals. Accreditation represents independent confirmation of the achievement BIM level 2 good practices leading to best practice through defined, continuous improvement milestones, set out over the three-year accreditation term.

For information on the Lloyd's Register BIM Level 2 Accreditation Scheme please visit the BIM scheme guidance document on our website which may be accessed by clicking on the publication above, or by the following link:

http://www.lloydsregister.co.uk/Images/BIM%20Guidance%20Document%20Mar2015%20v3_tcm240-249617.pdf

Or contact:

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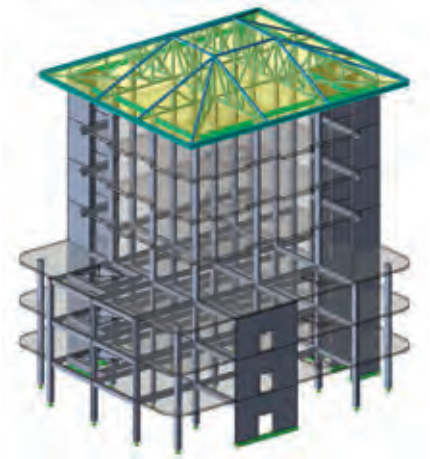
Lloyd's Register Energy

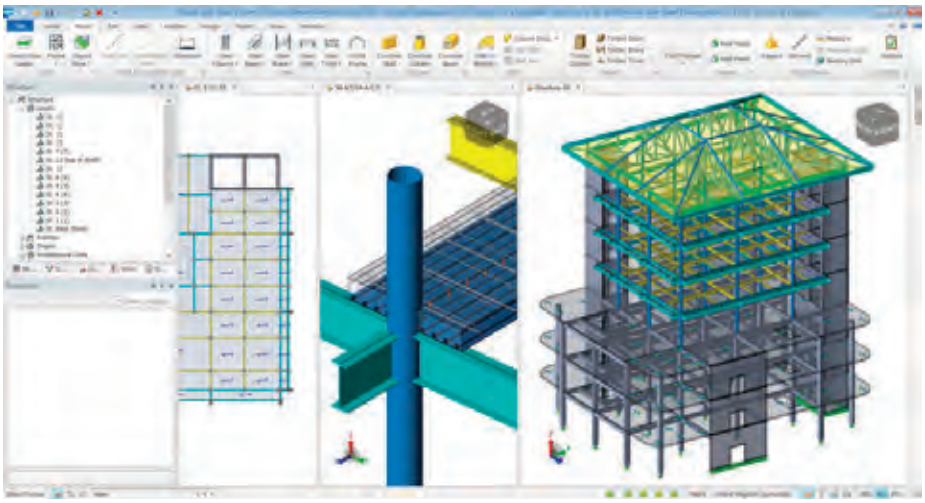
Tekla Launches Structural Designer

A Powerful New Way for Engineers to Analyse and Design Buildings...

Tekla, a Trimble company, announced it has added a product to its portfolio, Tekla Structural Designer; a dedicated analysis and design software for structural engineers working on commercial building projects. Tekla Structural Designer complements Tekla Structures - extending the benefits of 3D modelling for engineers with an innovative approach that combines analysis and design into a single, seamless process. Tekla Structural Designer's sophisticated loading and analysis functionality, fully automated design, high-quality documentation and seamless Building Information Modelling (BIM) collaboration allows engineers to analyse and design buildings more efficiently and cost effectively.

Tekla Structural Designer offers powerful features for optimising concrete and steel design, and enables engineers to compare alternative design schemes quickly, efficiently manage changes and collaborate seamlessly. Regardless of project size or complexity, Tekla Structural Designer's fully automated, productivity-enhancing capabilities enable



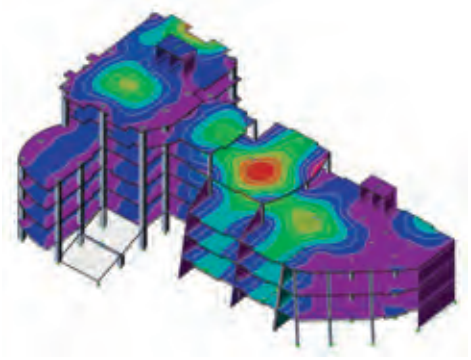


engineering firms to successfully bid on more projects and enhance their client service.

"Many of us at Tekla are engineers ourselves and understand the importance that productivity, value engineering, constructability and change management play in the design and build process," said Barry Chapman, Director of Engineering Segment at Tekla. "We have created and added Tekla Structural Designer to our Tekla product portfolio to further extend the benefits of 3D modelling directly to engineers, by bringing them the power to analyse and design better in a way that can save time, cut costs and provide a competitive edge."

Tekla Structural Designer: Meeting the Real-World Needs and Challenges of Engineers

Improving Productivity – By enabling structural engineers to create a single analysis and design model, Tekla Structural Designer



eliminates the need for post-processing analysis results. Fully automated loading and design includes wind loading and finite element analysis for faster design times, while product documentation is automatically produced, allowing engineers to make informed decisions at every stage of a project.

Bidding Projects to Win – Structural engineers can quickly create and compare multiple design options for determining the most competitive scheme to successfully bid on more projects.

Streamlining Change Management – With Tekla Structural Designer, changes can be easily managed, reducing response time at any stage of a project. The changes can be applied across the entire model to instantly assess impact and automatically get a re-design in seconds. Calculation reports that automatically update eliminate the need to generate new reports manually when changes occur.

Enhancing BIM Collaboration and Integration – This was in mind when Tekla Structural Designer was developed. Structural engineers can synchronise models repeatedly with Tekla Structures and other tools without compromising vital design data. Tekla Structural Designer's auditing tools let engineers see what has been added, changed or deleted during integration, reducing the risk of errors and maximising collaboration with other project team members, including technicians, fabricators and architects. Internal communication within the structural design office between structural engineers and technicians is more fluent and accurate.

Cost Savings and Convenience – With all structural analysis and design functions combined into a single solution, Tekla Structural Designer eliminates the need for additional modules or software packages to buy, maintain, learn or integrate with.

Tekla Structural Designer is available now to a range of design codes, including British Standards, Eurocode and US design code. It offers a range of services including local technical support provided by experienced structural engineers and an online knowledge base with learning materials.

For more information, visit www.tekla.com/tekla-structural-designer .

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Why 'Soft Landings' matters

At Rider Levett Bucknall we think that Government Soft Landing's is a game-changer.

Potentially, it paves the way towards a new way of delivering construction. It leads to a total focus on clients' needs and an analysis of what the building is for, and not what type of building it is going to be at practical completion.

In reality clients do not want a building. They want to know what it can do for them. What matters is how it performs, how it functions, how the occupants feel and how it meets the objectives of the client's business.

Crucially, the soft landings approach changes our relationship with the people who commission and the people who use the buildings we build. This is good, because ultimately the building is only as useful as the occupants make it.

A prime motivation for soft landings is the often huge performance gaps that appear between the promise sold to clients, the suitability of the building delivered and the performance of that building in operation.

Too often buildings are handed over that don't work for the users and occupants are sometimes left with little guidance on how to operate what is a complex asset.

Poor aftercare and poorly considered design are not isolated to construction but soft landings can deliver much more for the client; an operational facility not the practical completion of a building.

There are barriers. The biggest may well be the fear of extra costs, particularly as these costs tend to be accrued at the front end. But longer term, costs will be reduced through a higher performing asset which is designed with the long-term in mind.

As part of our process we carry out whole life costing through our own in-house tool. Our software integrates capital, energy, carbon and lifecycle costs into one model and considers factors including; the upfront capital costs of construction, maintenance and repair costs (including replacement), projected energy usage costs, carbon emissions, FM costs and decommissioning and demolition costs at the end of the asset's lifetime.

By linking this information with data from the BIM and Computer Aided Facilities Management (CAFM) databases we can develop a considered view of costs throughout the lifetime of the building. Regular performance management and analysis is undertaken and then fed back into the model which ensures that the BIM is maintained and always relevant.

By taking this holistic approach, clients can significantly reduce their long term costs and carbon emissions and ensure that their building is fit for purpose throughout a predefined time period.

With business needs changing, it also provides enough information to enable an efficient, flexible approach to estate management and the ability to change things if required in the future, for example repurposing existing space.

RLB Rider Levett Bucknall

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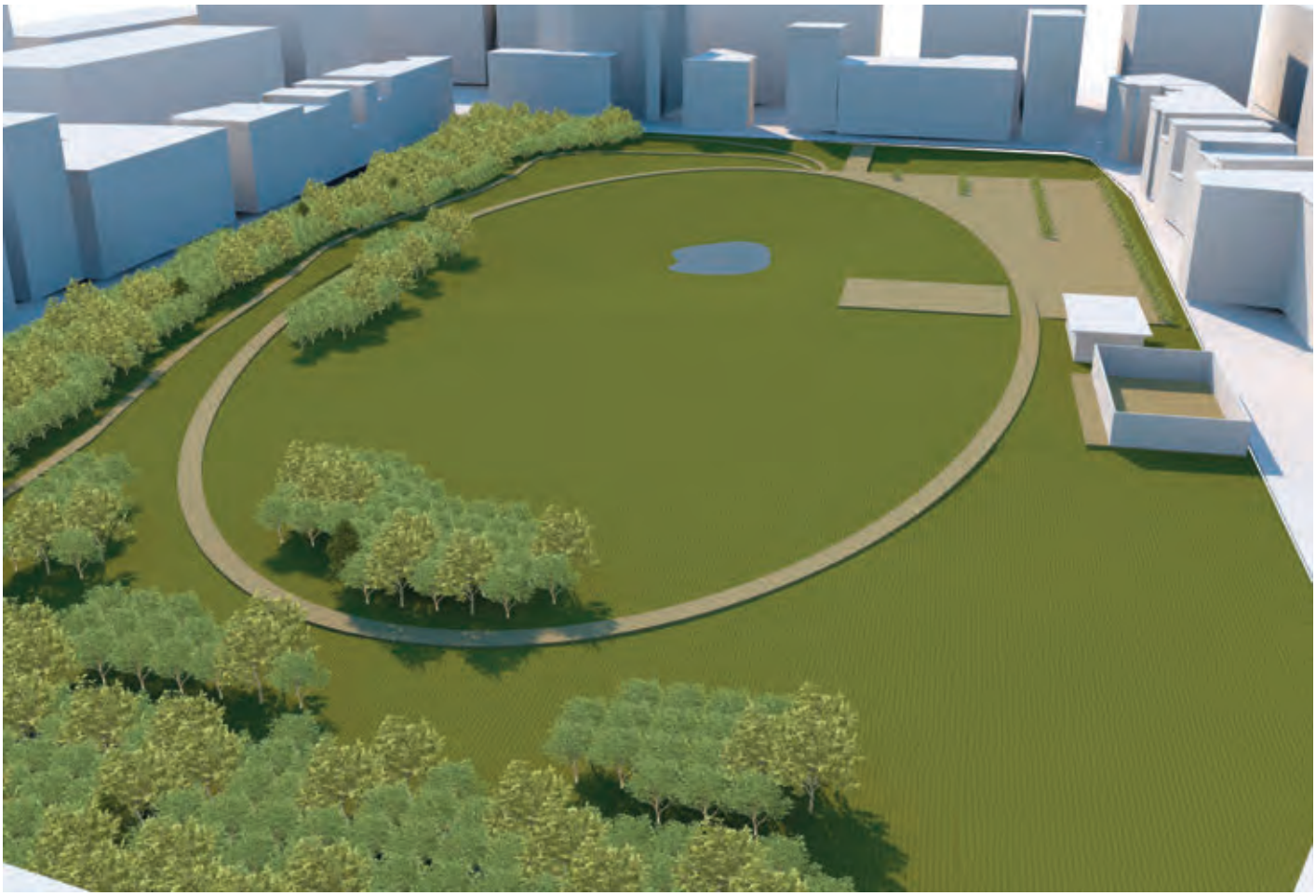


Getting our BIM data in order

Martyn Horne of the Landscape Institute's BIM Working Group explains why BIM data in the form of COBie requirements is not something to fear...

To paraphrase the former Chief Construction Advisor to the UK Government, Paul Morrell, BIM is an opportunity for the construction industry to get its data in order. Of course BIM is a lot more than that, and the ability to create models of building and landscape projects in the virtual world prior to construction offers all sorts of benefits such as design analysis, clash detection, pre-visualisation and increased levels of automated design documentation. However, in this article I want to talk about data or information — the 'I' in BIM. The UK Government's BIM Mandate for Level 2 is fast approaching and the provision of data in a standard known as COBie is an important aspect of that mandate.

The UK Government BIM Level 2 Mandate and COBie

The ability to attach or embed data to virtual 2D or 3D geometry is not new. For example, I have been working with Nemetschek Vectorworks since the mid 90's, and even back then it was possible to assign data to objects in order to automatically generate schedules, reports and bills of quantities. The problem with working in any software of the time was that due to a lack of data standards, almost every project, certainly every practice, used different sets of data, which typically evolved idiosyncratically over a number of years. The difference with the BIM evolution is that collectively, as an industry, we are trying to agree

common data standards throughout the lifecycle of a project chain. This involves the multiple tiers of the supply chain, the consultants, architects, landscape architects, designers, the contractors, facilities management consultants and the client.

Such a big project will take time, and for it to be successful, it will be necessary to tackle it in a number of stages. This is precisely the approach of the UK Government and the BIM Level 2 Mandate for 2016. One of the aspects of this mandate is the ability to deliver COBie compliant data. As described by Bill East of Prairie Sky Consulting; "COBie is the list of all the managed and maintained assets in a building." He goes on to say that "the data delivered matches the information provided on the design schedules". With my Landscape Institute hat on, I would substitute 'building' with project, in order to encompass wider industries such as landscape and infrastructure. Many commentators incorrectly refer to COBie primarily as a spreadsheet. It is more accurate to describe it as a data set which corresponds to a common standard, which can, if so desired, be presented in a spreadsheet format or which can also reside in a database. The important aspect is that the data corresponds to a common standard.

Why is COBie criticised?

To make my position clear, I think COBie is a good thing even if it does come in for some criticism. Often, I hear the general term that 'It doesn't work'. This is generally unhelpful and simply leads to increased levels of what my colleague Robert Anderson, refers to as 'FUD', in other words fear, uncertainty and doubt. Having said which, there are a few factors which can lead to COBie failing.

First is the misunderstanding that the full COBie dataset needs to be completed at the outset of the project. This misapprehension leads to consultants involved in the design stages to complain that their creativity is being stifled. The reality is that COBie can be completed in stages and the data is built up over time reflecting the level of resolution and detail of the design in progress. In the CIC Digital Plan of Work, there are several formal 'data drops' ie designated points in the design process where a data exchange takes place between the various members of the project team.

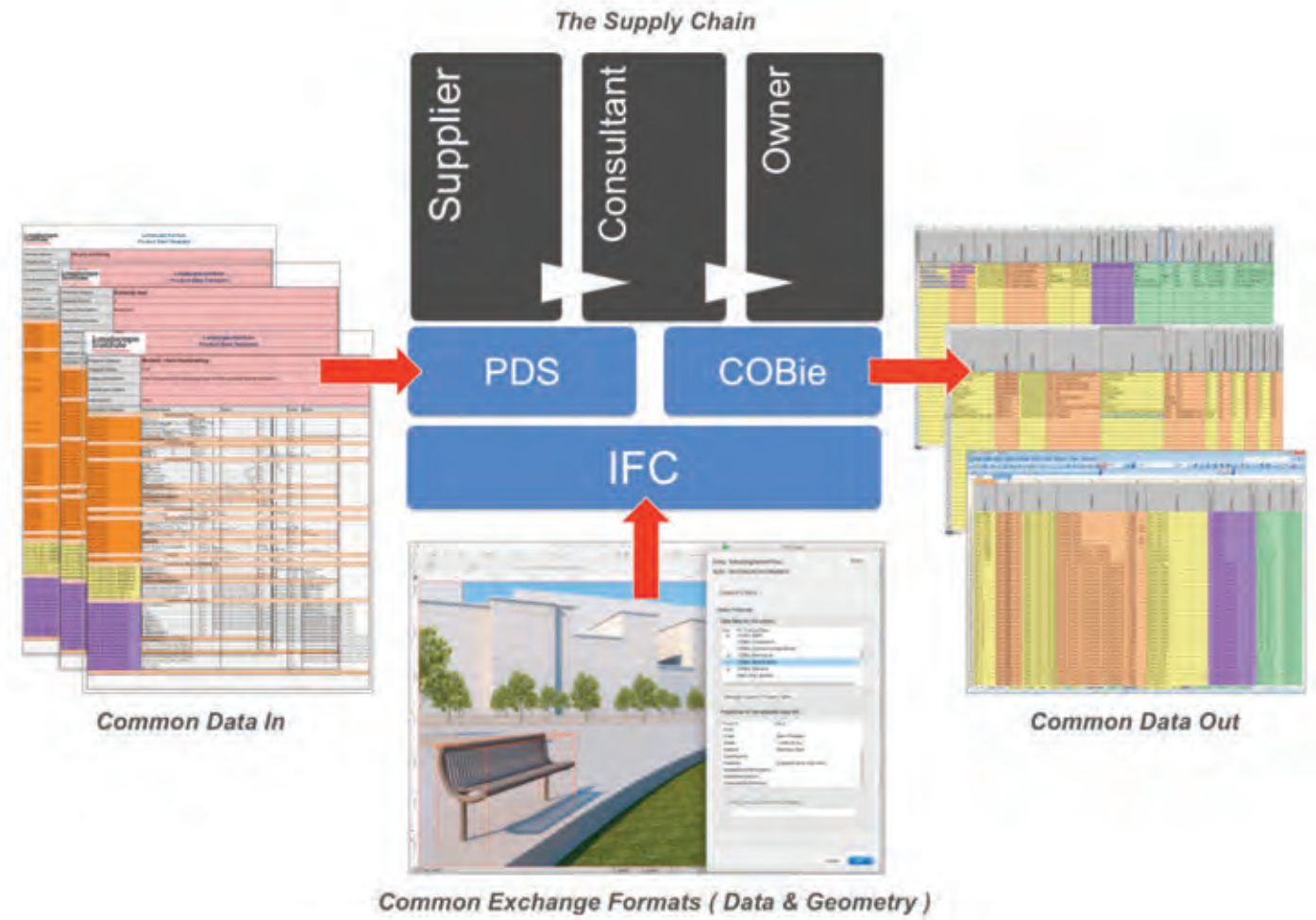
The early COBie data drops contain little more than a confirmation of the brief and schedules of the conceptual spaces, zones and areas of the building, site and landscaping. These are easily produced from today's BIM software.

It is only during the later COBie data drops that an additional refined dataset is required. At these stages, COBIe requires a listing of the types of object used within the project, followed by individual components of the design and then the specific manufacturer and supplier.

The requirement to provide product manufacturer details leads to the second misapprehension about COBie – that of product attributes. COBie allows for product attributes to be supplied at the later stages of the project. There are two questions to consider here. Firstly, where does the designer get this information from and secondly, is it necessary to provide a complete product data specification for each object within the BIM?

To address the first question, let's be clear, it is not the intention of COBie to place the burden of data input onto the shoulders of the architect designer. Instead, this will be fulfilled by the development and implementation of common industry standards for product specification. Initially called SPie in the US (Specifiers' Properties information exchange) this has evolved in the UK into what we know as Product Data Templates (PDTs) and Product Data Sheets (PDSs) – simply put, these are common templates (PDTs) supplied by the respective industry institutions (such as CIBSE, Landscape Institute) which provide a common set of data fields. They are templates because at this stage they contain only the field names but no actual data. These templates are then filled out by each manufacturer, and supplied to the design team in the form of Product Data Sheets or preferably, digital models embedded with the same common Product Data Information.

Various organisations such as CIBSE and the Landscape Institute are working on these data templates as we speak, and we are currently in a period of consultation with manufacturing organisations and the manufacturers themselves. Another interesting development on this side is the formation of a



BuildingSMART group including representatives from ARUP, Nemetschek Vectorworks, RIBA NBS, the Landscape Institute and the BRE, in addition to several international organisations who are looking specifically into how these data templates will fit into the open BIM standard of IFC.

It is fair to say this is an evolving process and with this in mind it is important that when COBie is requested at the outset of a project, the Attributes section of the COBie dataset is considered carefully at this point in time. This is where it becomes critical to have both a BIM Execution Plan (BEP) and an Employers Information Requirement (EIP) document in place at the outset of the project.

To address the second question, as to whether it is necessary to supply a complete product specification for each object within the BIM, the current consensus would suggest that it is not. Instead, we need to think about a number of aspects; what information is required to make an informed decision about which product to use in the design; what information needs to be supplied in order to construct the project; what information will be required to maintain the project and what information are the manufacturers able to provide. The Product Data Templates and Sheets project outlined above will, I believe, go a long way to answering these questions and it will be very interesting to see how this aspect of the BIM process evolves to help us collaborate together effectively and get our data in order. ■

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INNOVATION IN VECTORWORKS BIM

READ AXIOM ARCHITECTS STORY ON GETTING STARTED WITH BIM

THE PRACTICE

Since Axiom Architects was founded in 1986, the practice has grown from its origins in Lewes, East Sussex, to become a well-established company with experience in a variety of sectors from hotels, bars and restaurants, to offices, residential schemes and educational projects across the UK and abroad. Our projects have allowed us to work with a wide range of clients, including multinational organisations as well as small companies and individual private clients.

Vectorworks Architect has been our primary CAD programme since its origins as MiniCAD, though it is only over the last 2 years that the practice has begun to adopt a 3D working method and started to explore the benefits that Vectorworks provides as a Building Information Modelling tool.

STARTING SMALL - PREMIER INN HOTEL, CLACTON

The construction of a new Premier Inn in Clacton represented our first use of BIM on a live project. The proposed scheme was a 3 storey new build hotel comprising 66 bedrooms with a ground floor reception and restaurant and associated staff facilities. The building followed a relatively simple rectilinear form and had a limited number of room variations based on a standardised layout.

Given the modest size of the scheme, the high degree of standardisation and repetition and the project's fairly modest size, the proposed hotel was ideally suited as a BIM test. As a relatively model design, it also offered potential for BIM components used in this project to be refined and developed on later jobs offering future efficiency savings.

Timescale was also a key consideration, the intended project programme allowed 16 months from the start of RIBA Work Stage 4 to completion on site. The scheme followed a traditional procurement route with a 12 month construction programme, allowing 4 months to complete production information for the project.

EXPLORING BIM ON A LARGER PROJECT - HUB BY PREMIER INN, KINGS CROSS

With the success of Premier Inn across the UK and London, 2014 saw the public launch of 'hub by Premier Inn', it's first hotel opening in the West End of London in November that year. This hotel was also the first in the UK to achieve a BREEAM Outstanding rating.

The hub concept is based around an affordable compact bedroom designed for city centre locations that includes high tech features such as high speed wi-fi and mobile app operated lighting, air conditioning and smart TVs. Making the most of the space available, the compact room design features various fitted components to maximise functionality of the room within an area of 11sq m. Given the compact footprint and extensive level of fit-out to each room, accuracy of construction and furniture specification was key to delivering a successful product.

After working on that project and developing the prototype design in a 2D traditional manner, the similar standardised layouts, bespoke fitted components and innovative high-tech room design were well suited to a BIM approach.

MANAGING A CONSOLIDATED MODEL

With a more developed understanding of 3D working in Vectorworks, initial BIM development for the project sought to develop a project resource library of building elements and symbols for key

components and room types and establish an organisational framework for the project.

Working in 3D and developing BIM information substantially increased file sizes beyond those we had previously been dealing with, but learning from previous trial projects, it became essential to plan out how the model was constructed to both limit file size and enable more than one person to work on the project at anyone time. To streamline work, the general model co-ordination was managed by the project leader who referenced detailed sections, schedules and room layouts to be worked on by others in parallel.

BREEAM BENEFITS

Another benefit in using a Vectorworks BIM workflow was the ability for information such as materials quantities for building elements to be quickly and accurately scheduled for Key BREEAM credits. Use of spaces allowed floor finishes and areas to be easily calculated. Floors, walls, roofs and partitions were scheduled to allow environmental ratings for the various elements to be measured.

DEALING WITH DESIGN CHANGES

Over the course of design development, various aspects of the scheme and Hub brand were changed. Through the use of a 3D model and project symbol library, such changes could be easily and quickly accommodated, with changes in plan automatically updated in elevations, sections and other drawings referencing these key sources.

NORTH-WEST ELEVATION

The ability for Vectorworks to quickly and easily filter out construction component information also meant that the same construction model could be used for planning applications without the need to draw separate schemes in parallel.

EXPORTING 3D INFORMATION

Whilst we are yet to use BIM collaboratively, this project did involve some limited exports of 3D information. The 3D model was used to generate Cinema 4D computer visualisations, which was also exported for the purposes of Rights of Light negotiations, helping to accurately establish the daylight and sunlight impacts of proposals upon surrounding properties. At tender stage an IFC 2x3 format model was also exported, allowing tendering contractors to call off materials quantities and obtain more accurate pricing information.

CONCLUSIONS

Whilst we are only taking our first few steps into the world of BIM, Vectorworks BIM capabilities have allowed us to progress fairly smoothly from our previous 2D working into 3D without the need to learn new software packages or suffer problems of compatibility moving from one CAD platform to another.

Written by Luke Bray of Axiom Architects and Jonathan Reeves of Jonathan Reeves Architecture

Architectural Design
www.axiomarchitects.co.uk

Vectorworks BIM Training & support was provided by Jonathan Reeves
www.jra-vectorworks-cad.co.uk

BIMXtra delivers an integrated digital handover

In what is otherwise a complex manual process, Kier Construction and LSI Architects have delivered an integrated digital handover of some student residences for the University of East Anglia using the leading edge Clearbox solution, BIMXtra. What is even more remarkable is that this is on a circa £10m project that has utilised many different BIM authoring tools. As a consequence the project won the Construction Computing Awards 'Collaboration Project 2014' after bringing the whole team together to work in a single federated source of data, and was also a finalist in the BIM Project 2014 at the same event.

"From a site and personal perspective the overall implementation of BIM on Crome Court was a tremendous success and testament to the hard work and professionalism of the overall team, including Subcontractors and Consultants".

The key to this success on a project with so many different authoring tools is the ability of BIMXtra to gather models and data as a single source of truth; in essence a real Common Data Environment in which everyone had only one instance of handover information before the output was compiled directly to a COBie level 4 data drop.

LSI Architects used ArchiCAD, the Mechanical/Electrical Engineer used Revit, Ramboll the Civil/Structural Engineer used Revit for Substructure, and Microstation for Civils with the CLT frame manufacturer using 3D Cadwork to produce their fabrication model. Bringing all these different types of authoring tools together is notoriously difficult, but with

BIMXtra and using IFC where appropriate, we imported the models into a structured data environment and allowed all parties to work on the handover information without having to go back to the model to enter data with all the inefficiencies and complexity of double handling information. In reality once you get beyond COBie drop 3 most of the information is not relevant to the design and so putting it in the model is of debatable merit, it is also hard to attach documents and other relevant information whereas in BIMXtra any of this information is easily attached or referenced.

What will also potentially help the Clients FM team is that many of the updates in operation are simply data changes, whether they are changes to a piece of equipment or confirmation of a recent inspection they require quick and easy access without the complexity and cost of the traditional authoring tools.

The data captured in BIMXtra throughout the project delivery, has been extracted as a COBie data drop via built in functionality. The University now have the opportunity to drive the data into their CAFM system via a database to database transaction.

In essence the data content in the authoring models can be as light as the author may choose, with any additional required design performance data inputted directly into the BIMXtra environment associated to the components. Once design schedules were complete and validated, we added the Construction and O&M information required to populate the Asset Information Model (AIM) for handover.

Speaking about the success of the project, Kevin James the Project Manager for Kier Construction said "From a site and personal perspective the overall implementation of BIM on Crome Court was a tremendous success and testament to the hard work and professionalism of the overall team, including Subcontractors and Consultants".

This has been an enlightening project for the Kier Eastern Team. We now have confidence to deliver the 6D output and are engaging with other clients to explore the benefits this can provide for them, we see this as a key factor to securing future work as we move further into the digital delivery of construction information. While we found areas for further improvement in the process, the Clearbox team responded quickly to give us the opportunity on the Crome Court project, and this helped to inform the development of this particular area of BIMXtra to be refined further for the next project.

Construction Computing AWARDS
THE HAMMERS IX

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Delivering COBie in the Real World

Government contracts are increasingly requiring the delivery of detailed information about assets incorporated into their construction projects. This information is handed over during the construction project and at completion and is commonly termed "COBie" (Construction Operation Building Information Exchange).

The initial source of the COBie data is from the BIM models. Traditionally to develop the COBie output, trained operatives either insert information about the asset into a BIM model or type it into associated schedules – a time and skills expensive process with all the opportunity for error that occurs from disconnected information.

And then what happens if there are changes to the asset or you have several BIM models created by different design disciplines?

Clearbox Ltd have developed BIMXtra which makes creating the COBie output a simple part of the design and construction process.

The BIMXtra process takes all of your BIM models (most CAD formats) and consolidates them into a single "federated" model. Information about the asset is then enriched with information generated by the project stakeholders. Using common software tools information is uploaded and stored against the asset. Because it is held in an associated database, any change to the asset is highlighted and track changed, and because we use common tools to upload the information, no special training is required.

With BIMXtra you can handover at completion all the asset information, i.e. geometric, design, commissioning, test data, O&M etc... as part of the normal project delivery process.

BIMXtra provides the accurate COBie output, giving the end user the digital asset information to allow the end user to effectively maintain and operate the asset with the minimum of added effort from the project delivery team.

A digital handover enables the operational phase

In reality, conventional handovers that were focussed on paper based systems invariably required the Client to employ people to translate handover information into a format that asset management and CAFM (Computer Aided Facilities Management) systems could use. The presence of COBie helps this to happen by simple file transfer, but goes on to reduce the cost of implementing other valued toolsets like, energy monitoring

or remote fault monitoring which all rely on the simple transfer of data at handover into a specialist tool. Reducing the cost associated with the information transfer reduces the real cost of using other tools and consequently improves the ROI (Return on Investment) over other tools. So the benefits to the operational phase arise from the handover and will no doubt affect cost and carbon at the same time.

The digital output has moved from Client, post-handover to Project, pre-handover

So producing a digital handover (COBie or otherwise) has real value, but the laborious nature of producing the outcome has moved from a post-handover task carried out by the Client, to a pre-handover task carried out by the project. BIMXtra is designed to make the task simple

Level 2 BIM is a file based process and this makes the task of producing COBie cumbersome, BIMXtra solves this issue

In Level 2 BIM the process is essentially a file based output in which information has to be collated and assigned to the COBie file. The starting point of this is the model which identifies the objects to be included in the COBie file. However, much of the information required for handover centres around documents and attachments such as procurement information, warranties, commission records and test sheets. Model based technologies are neither appropriate nor efficient at handling such associations of information. Indeed, in operation the problems are accentuated when you examine typical day to day asset management tasks which rely essentially on data changes to objects, not changes to the geometry and model information.

A recent handover by Kier Construction on Crome Court for the University of East Anglia exemplified these points, but it was all the more acute because the project had been authored in four different BIM authoring tools. Its saving grace was that it was small enough to manage, but not large enough to be able to afford dedicated personnel on the issue. So BIMXtra really helped and led to the project becoming the Construction Computing Collaboration Project of the year 2014.

The benefits of a data centric process for BIM don't stop at COBie, they are everywhere

In BIMXtra, the process of data aggregation, enhancement and compilation of the information is a core part of the BIMXtra toolset. BIM outputs from consultants are pulled into BIMXtra and the data arranged in a structured format for users to interface with, pertinent to the way they work. BIMXtra supports the management of the process to ensure the current information is available to export when necessary to the COBie output, as a change managed outcome of the process, not a process within itself. The benefits of collecting information this way ensures that when there are design changes or updates, a user can simply push a button and generate a new output report.

In contrast to this, managing the process of adding data into models; compiling, structuring and organising documentation, recreating an updated COBie file whilst a project progresses – the differences are significant.

But the benefits of this data centric approach to BIM does not stop at the ease with which we produce the COBie output, or indeed most digital handover packs. It is the simplicity with which most other BIM tasks can be undertaken; from efficient visual programme simulation, right down to the ease with which the federated model viewing can be managed through our purpose built viewer. A data centric approach to BIM makes the process easier and more manageable. Evidence from the recent handover of the University of East Anglia student residence project by Kier Construction Eastern bears this out and highlights the benefits technology can bring to this new BIM world.

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 the Clearbox website can be found at www.clearboxbim.com

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BIM and the SME: future-proofing operations

Alan Muse, Director of Built Environment Professional Groups at RICS argues that without the engagement of SMEs in the BIM process, the UK could stand to lose its global competitiveness in the long term...

Building Information Modelling (BIM) has come into sharp focus in recent years, particularly given the Government Construction Strategy (GCS), which requires contractors to have attained fully collaborative 3D BIM by 2016.

However, when it comes to adopting BIM there seems to be a two tier system developing between those that are actively engaging with the technology and those that aren't. Furthermore, it seems that it is the larger contractors that are more inclined to engage when compared to their SME counterparts.

In order to amplify, and collectively optimise the benefits that BIM brings to the built environment, it is imperative that all organisations regardless of their size, start to stand up and take notice of the technology. After all, there's one thing we can all be sure of, and that's that BIM is not going to go away anytime soon.

As it becomes a central part of construction procurement criteria in the public sector, we can expect the private sector to follow suit in the not too distant future – particularly given the potential cost and environmental savings that BIM usage brings. What's more, without the engagement of SMEs – a large part of the UK construction industry – the UK could stand to lose its global competitiveness in the long term.

That's why more SMEs need to start taking the necessary steps towards engagement. With the amount of information now available, there's never been a better time to start a 'BIM journey'.

RICS offers a number of resources, services and qualifications in order to help the industry engage fully with BIM. For example, we have dedicated resources online with the aim of introducing all organisations to BIM as well as a number of training sessions which look at how BIM can be implemented and managed.

Furthermore, RICS has developed the first BIM Manager Certification scheme in response to industry requirements to have a standard that demonstrates the skills and competence of construction professionals in using BIM.

In February, RICS held a conference dedicated to BIM in London, which was designed to bring all sections of the industry together to discuss the issues surrounding the technology and its wider adoption across the industry.

With BIM set to gain momentum as the standard platform by which organisations of differing sizes and disciplines collaborate on construction projects, we must ensure that all sectors of the industry are equipped with the skills and training they need. Not only will SMEs future-proof their operations by adopting BIM, they will also help to support the UK industry in becoming a global leader in the implementation and management of the technology. ■

For more information on adopting BIM, visit: www.bimtaskgroup.org

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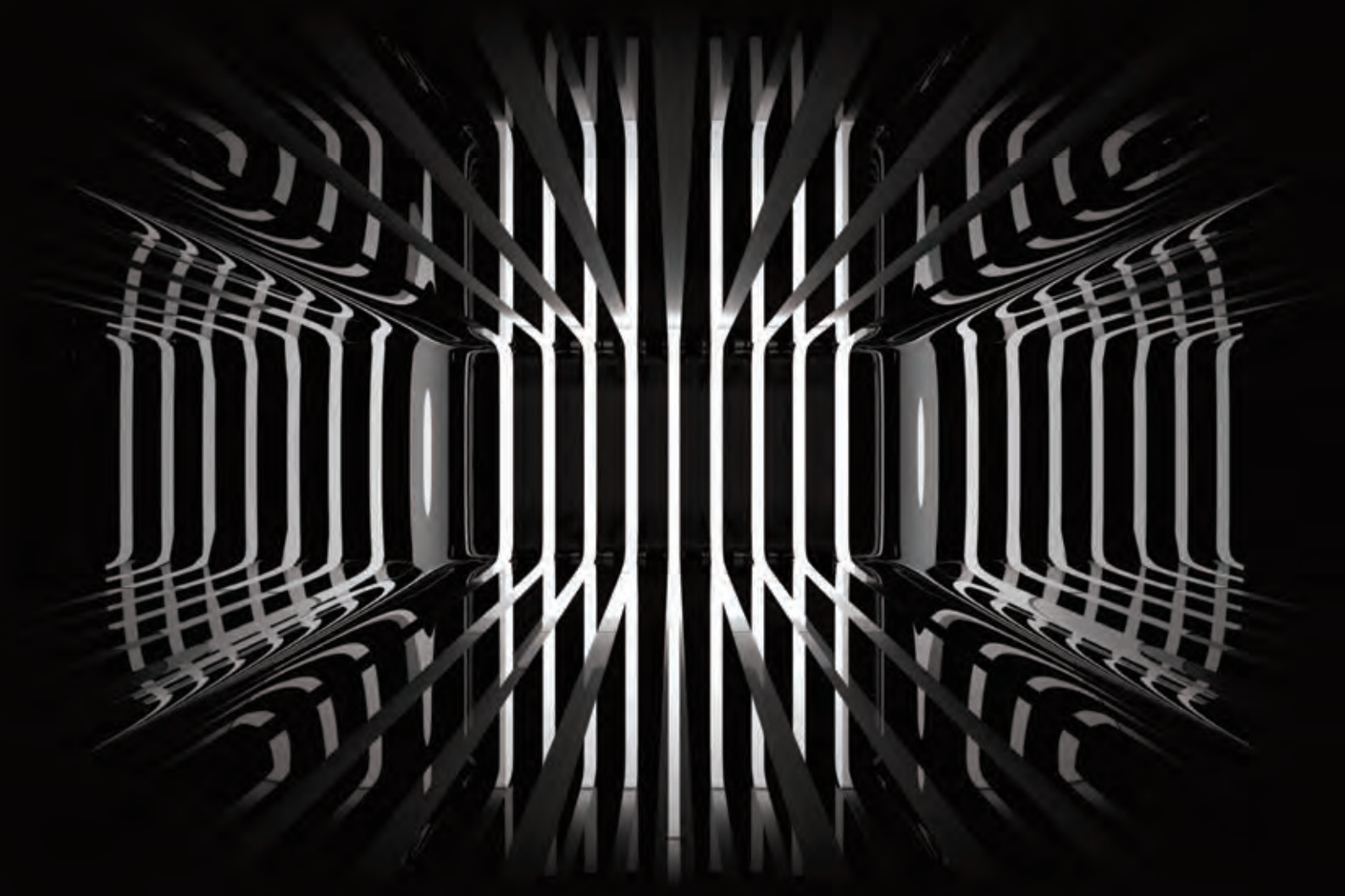

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BIM for surveys – a model of excellence

Through a combination of its highly experienced, knowledgeable personnel and the latest cutting-edge technologies, Murphy Surveys is at the forefront of delivering expert survey solutions. Commenting on the growth and expansion of the company since its foundation, Kai Duebbert, Managing Director of Murphy Surveys explains:

"We've grown considerably and established ourselves as one of the leading surveying companies in the UK, with a portfolio of long-standing clients who return to us for our full range of surveying services. We work with our clients to find the best approach for them – this is achieved through direct consultation with the client to find appropriate solutions to fit their projects and budget. A lot of effort is invested into working with the client to make sure that the whole system is designed properly to meet their needs."

Project Profile

Murphy Surveys recently completed a project at Kidderpore, Hampstead which involved the survey of 15 Grade II listed buildings, as well as the surrounding land and all utilities services. The project began with a precise survey control. Murphy's then scanned the area using a high definition 3D terrestrial laser scan and produced high dynamic range 360 panoramic imagery. Collaborative point-cloud viewing (TruView) was produced prior to production of 3D parametric BIM.

Heritage projects such as these pose very specific challenges; the random and varied nature of each building means each one has its own levels, spaces and details. Murphy Surveys were able to overcome such hurdles due to the experienced nature of both the surveyors involved and the BIM modelling team. Collaboration was key to producing the model.

"We work with our clients to find the best approach for them – this is achieved through direct consultation with the client to find appropriate solutions to fit their projects and budget."

Windows and columns in the buildings were all varied and extremely ornate. Custom families had to be built for each type of window which included items such as glazing bars, metal security bars and grills. Reveals and stonework surrounds of a widely varied nature across all 15 buildings were also required. Point clouds were incorporated into the model to ensure the utmost accuracy when it came to modelling the existing surfaces. Modelling took into account the verticality and horizontality of the walls, ceilings and floors. Sagging often occurs with heritage buildings and existing structures; this was taken into account when these were modelled.

The ability to view point cloud scans of the buildings using TruView allowed clients and design teams to view the rich real time laser scan of the existing structure internally as if they were navigating in Google Maps Streetview. Of vital importance is the ability to pan and zoom around the scans and view from each scanner position. This is invaluable in saving time, as there were no site return visits. It also allows quick, efficient and accurate collaboration.

Aside from being a visually accurate model of the buildings on the site, relevant information was also inputted to the model. This included information such as customised parameters, which allowed the BIM modellers to note various conflicts or notes regarding

the model. Any items that were unknown or deviations from real world conditions were noted in the relevant walls and surveyed surfaces that were in the model, while other deviations and comments from both surveyors and the modelling team were also inputted to the relevant object properties for tracking and usability purposes.

"A lot of effort is invested into working with the client to make sure that the whole system is designed properly to meet their needs."

Once parameters like these are created and used consistently by all, filters and schedules can be set up easily in the model file which allow the client and other users to isolate and filter all relevant objects in the model, even those that contain particular notes and information. We can then view such objects at a glance, instead of trawling through a drawing looking for inaccuracies or deviations manually and comparing these against other information. This is essential on large projects like this in order to cut down on time spent checking over models and drawings.

At its most basic level, this allows errors or difficulties in a survey to be highlighted quickly and therefore tracked. It is essential that such notes and tolerances are kept track of in the model in order to improve the accuracy and collaborative nature of surveying. Creating and maintaining good and accurate data, with the help of notes and comments, helps identify objects of interest other than just the visual. This means schedules and spreadsheets can be generated for both asset management and fabrication purposes, as well as surveying real world physical conditions.

This process allows valuable information to be more viewable to everybody and highlights how important BIM can be. Aside from creating 3D representations of the built environment, BIM allows all information to be kept in a single model or environment. Instead of collating various sheets, CAD drawings and specifications in various IT systems or cabinets, this single model significantly reduces waste, time spent on return site visits and ultimately costs.

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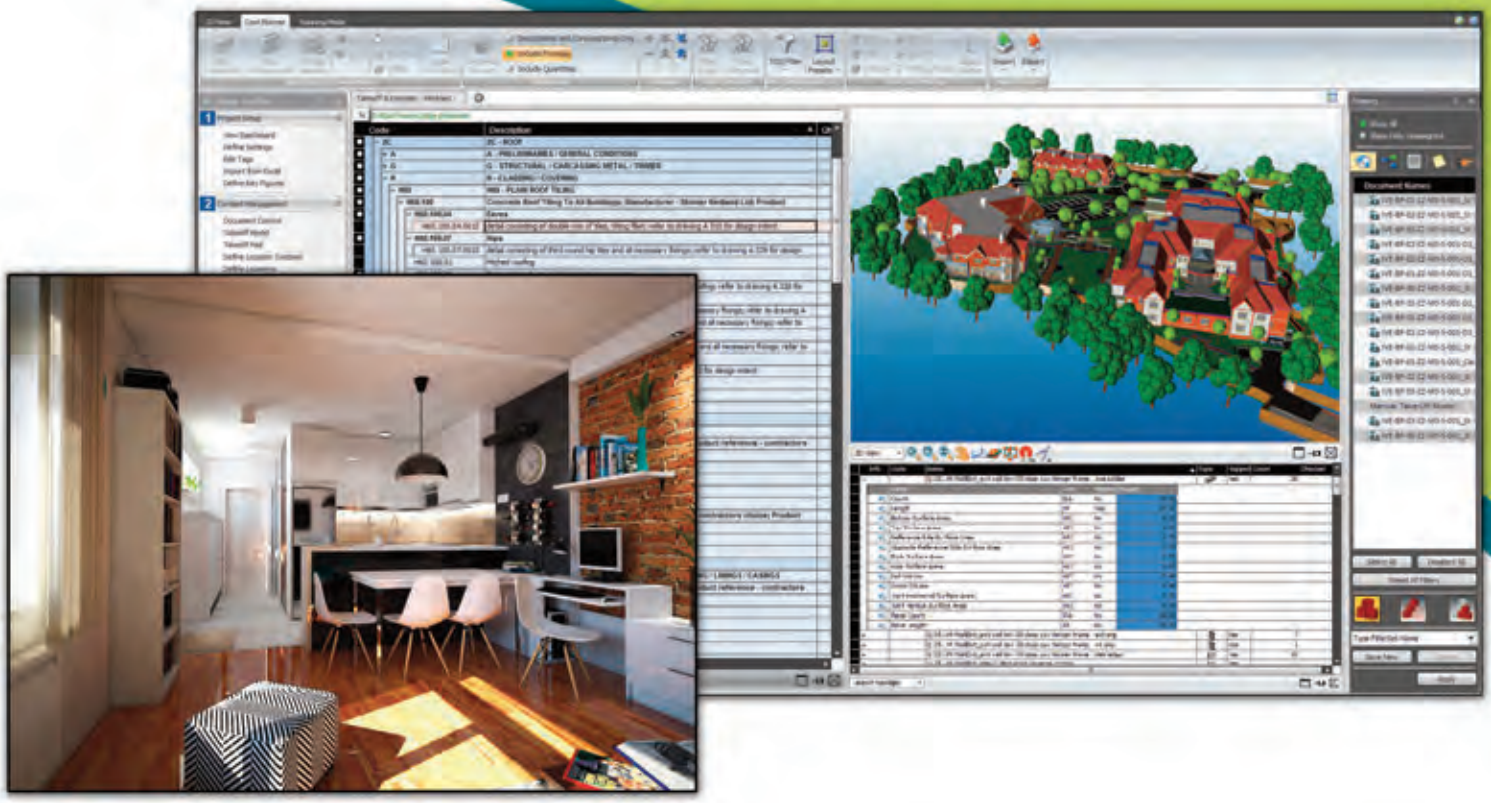

BIM Level 2 Compliance and Implementation at Bill Prep

Our BIM journey began in January 2014 with a significant investment in BIM neutral collaborative software. This software is fully integrated across 2D and 3D measurement and billing, 4D planning and programming and 5D costing.

Services include:

- Bills of Quantities and cost plans
- 2D to 3D modelling
- Additional tender information such as window schedules
- Rendering, animations and construction sequencing
- Model audits for BIM level 2 compliance
- Clash detection
- BIM consultation and implementation

BILL PRODUCTION

Through our software we are able to bring in 3D models from almost any native format and automatically group identical BIM components to generate a substantial amount of quantity data for use in preparing cost plans and bills of quantities.

This process reduces measurement time and increases accuracy, it also allows for manipulation and adjustment of component data without affecting the authoring model.

All secured projects are now quantified through BIM as our in-house team of 3D software engineers will create 3D models from 2D drawings.

These models are created for measurement purposes and therefore include a lot more information than most models available at tender stage.

By creating our own models we are able to increase our scope of services.

BIM SERVICES

BIM level 2 compliance has been achieved through a series of coordinated processes and implementation of national standards such as BS1192:2007, PAS1192-2:2013 and COBie-UK-2012 into our project workflows.

We have our own internal BIM protocols and have adopted the AEC Cad standards best practise for open BIM.

We are able to offer a wide range of BIM services from simple 2D to 3D modelling through to fully rendered visualisations and 4D simulation.

We provide our clients with an exceptional level of BIM modelling service tailored to meet and support specific requirements as well as consultation and guidance to implement BIM to achieve BIM level 2 compliance.

To see samples of our models please click here: FTP://remote.billprep.co.uk

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BILL PREP AND SURVEYING

Open standards for open BIM

Dr Anne Kemp, Chair, BIM4IUK and Vice Chair of BuildingSMART reflects on recent discussions surrounding BIM in terms of the route to a Digital Built Britain and open standards...

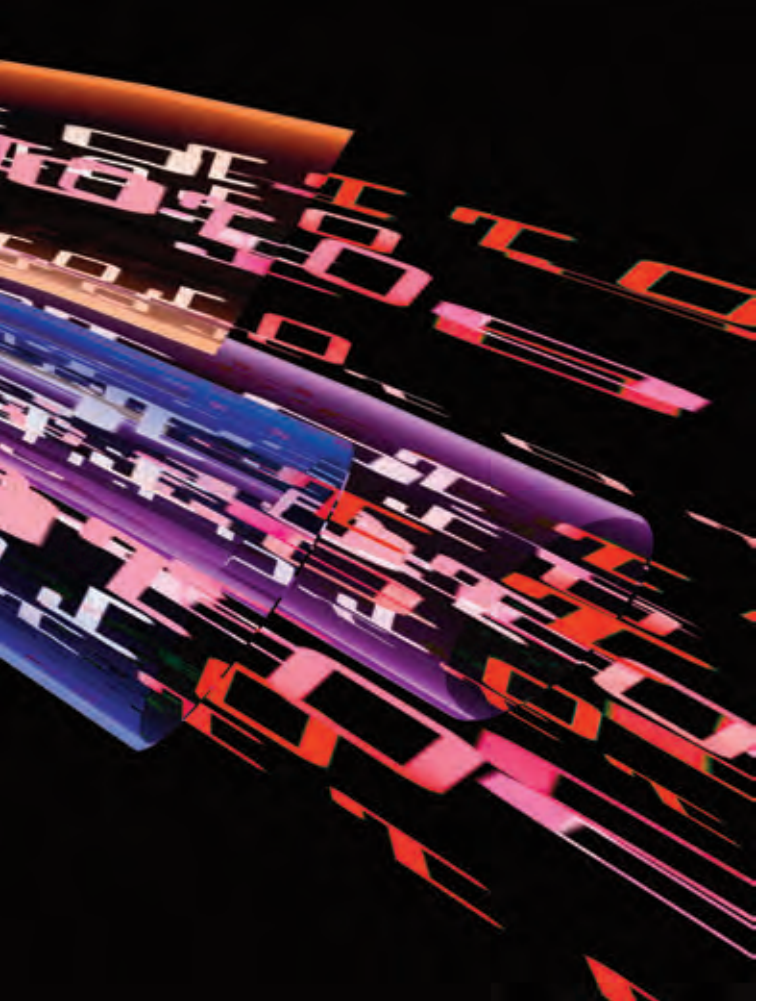
I've recently become Vice Chair of BuildingSMART UK and Ireland, and over the past 2 weeks I have been getting familiar with the organisation, both at the UK Chapter level and at the International level – since the last week of March was set aside for the BuildingSMART International Summit which was hosted at Watford followed by BIM Prospects, the BuildingSMART's first outward facing conference, in London.

I became very aware during this time of the vocabulary that the "BIM" community adopts, and how there is then a further vocabulary within BuildingSMART across the international organisation, but also within each Chapter. Why else would we still be having a debate about whether BIM is "just a technology"?!

I also became aware that we were exploring two parallel journeys, which were interdependent and converging.

The first was that of BuildingSMART itself – where it has come from, its heritage, the cornerstones of its success, and how it is evolving to adapt to the disruptive changes across the industry which serves the built environment.

Secondly, and particularly because the conference was hosted in the UK, we were overtly exploring the BIM journey here and how that appears to the rest of the world – its relevance, its current status and intentions, and the prospects for its contributions globally to deal with the disruptive changes we all



face. We determined that we are well on the road now to providing the building blocks required to deliver projects in Level 2, and that these were important to implement before venturing to Level 3.

But we also determined that the vision of what Level 2 then provides for us – the route to progression to a Digital Built Britain – has to be underpinned by the development and maintenance of international open standards. This is why BuildingSMART International is cited as one of the four organisations partnering to facilitate Digital Built Britain.

Looking back into February, I took part in an international thought leadership forum, followed by keynote speeches on Geo-BIM at the Geospatial World Forums in India and the Middle East. This provides a clue to another parallel journey which I also believe is converging with BIM in a way in which I have been hoping for some time. And that is the continued strengthening of the Open Geospatial Consortium (OGC) in developing open geospatial standards to serve overall management of information. Neither is it any accident that OGC has realised the strength in collaborating with other open standards bodies, such as the Worldwide Web Consortium (W3C).

BuildingSMART and OGC are working on a number of initiatives to develop greater collaboration between the organisations. It's useful to observe that IFC (Industry Foundation Classes) is to BuildingSMART what GML (Geographic Mark-up Language) is to OGC. And there needs to be a compromise, to achieve the kind of integration across differing platforms, spatial scales, and life stages that I believe the infrastructure industry needs to deliver on the promise of what BIM can achieve.

All these organisations have an over-arching, common problem statement which the industry as a whole needs them to address – that of how to stop data becoming part of the problem, whether it's open and structured data, or whether it's unstructured and generated by numerous devices, including ourselves.

I'm writing this on a return journey from a GreenBIM event, where I gave a talk on collaborative working – and how BIM can help to realise this. What was really insightful for me, was that this led on to two roundtable discussions around what is really required to realise BIM for Infrastructure – and the role of open standards.

The feedback was very clear. People don't really want to know what is happening under the bonnet and what format the data may or may not be in. They simply want to know that the data is open, and it is shareable – if that is appropriate, which it may not be to the wrong people if it is the detailed design of a prison. They also want to know that the services that the data supports serves their purpose – from the grassroots, of how a building can serve the needs of the individuals and organisations using the facility, or to a responsive BIM4Potholes where the individual can feel that there will actually be a follow-up to their report. That link of data to purpose also needs to go up to the strategic level, where organisations can prioritise investment projects to ensure that their business delivers the right outcomes to the customers they serve – whether that is a fast and efficient journey from Edinburgh to Birmingham, or supply of quality school places, to the demands of a changing demographic profile across the country.

What is clear is that the open standards organisations need the right people to come forward to help. For a start, there is a challenge around succession planning – we need younger people coming in with a passion to get stuck in. And we also need relevant Use Cases – examples of various problems and challenges which need to be solved and which can test current and evolving thinking. I am really heartened to see some of our major clients coming forward to collaborate – and the BIM4Infrastructure group can certainly help others who are interested to get a clearer picture of what is happening. Do please let me know if you want to be involved.

But my final point – what could be the unintended consequences of this immersion in digital data, within a virtual as against real world? And how can we design the way we deliver the data to avoid or work with these unintended consequences? How do we ensure that we not only enable intelligent computers and intelligent infrastructure – but that we also enable intelligent human beings who aren't merely consuming data – but are also able to engage, reflect and make humane, socially responsible decisions? ■

Dr Anne Kemp
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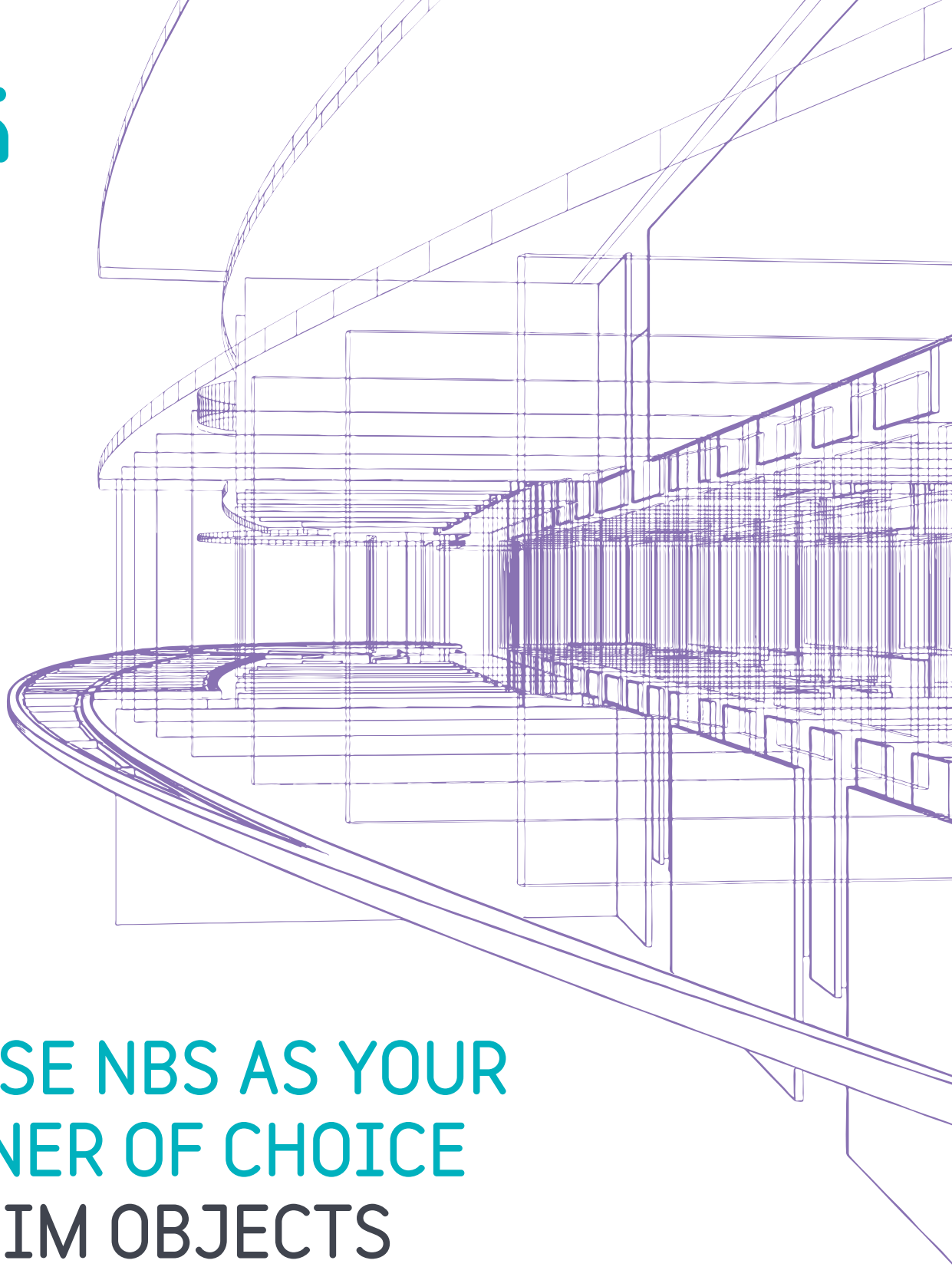

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One of the world leaders in construction engineering, Egis has adopted BIM as a production standard for the delivery of every project entrusted to the group. As a pioneer in research, training and promotion of BIM to its partners, the group today develops digital modelling applications for use from upstream phase right through to the maintenance and operation of structures.

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BIM processes for Infrastructure projects

Egis now have some experience and practice in BIM processes for infrastructure projects especially in facilities constructed on the ground or under the ground for human activities development inside the territories[1] ".

Compared to the buildings, the scope is larger, in terms of scales to be covered, systems to be developed and type of works to be constructed.

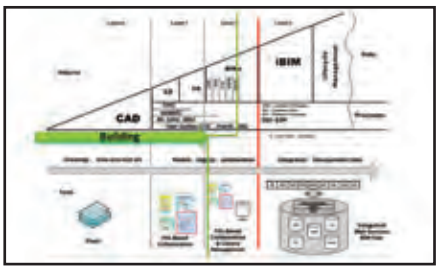
If the development of the BIM for Infrastructure must avoid "re-inventing the wheel", the items of interoperability of data, tools and processes need to be re-visited in order to stay relevant and to provide some real added value.

Level of BIM maturity In Infrastructure

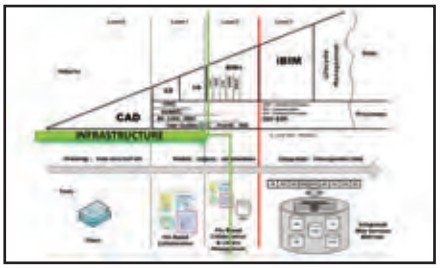
The BIM European Task Group, is agreed that the average level of maturity possible is Level 2 with the objectives to deliver for the year 2016. To simplify the concept, the BIM maturity Level 2 means: "Objects and models in 3 dimensions delivered in using the available standards and collaborative processes (for instance, Workflow, libraries...)

Two schemas compare how Egis evaluates the Level 2 maturity for a construction to be considered in a building, like a metro station, and for a construction like a motorway, based on the experience of delivered projects in France or in Middle East.

The processes for building are very much oriented by the 3D objects, natively managed by the authoring tools, using IFC standard, but losing maturity with the collaborative processes due to the usual collaborative tools: they are mainly dedicated for files management.



Level 2 for Buildings



LEVEL 2 for Linear Infrastructure

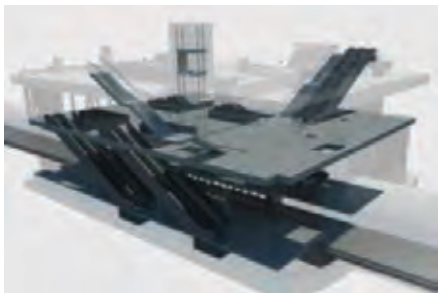
The infrastructure processes are more oriented models than objects which are not natively managed by the authoring tools. Nevertheless, because the collaborative tools are oriented files management, they appear relevant to manage the models files (workflow, versioning, etc.). It has to be mentioned, that the level of maturity cannot be homogenized for all of the works included in the infrastructure project and the extension of the standards are in progress with BSI and OGC.

Data Drop or Concurrent Engineering (C.E.)

Two approaches are possible for the BIM management:

- The data drop approach is mainly oriented on the deliverables to be produced by the BIM models for each phases. The goal is to deliver digital information for procurement.

- Another approach is possible with the goal to organize the approval management under a concurrent engineering process by the workflow management. BIM is used for the approval process, prior to the usual submission of deliverables (drawings, reports and models). The expected impact is to decrease the number of deliverables issuances.



Rennes Metro station

In case of developing the C.E. approach, the collaborative tools and the processes become the center point, the node of the BIM. The BIM benefits are not oriented to the Client only, but also to the information producers, improving their acceptance of the BIM implementation.

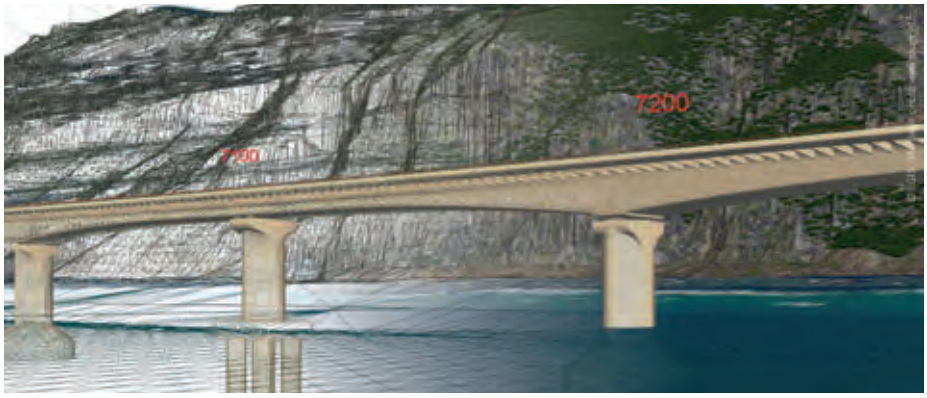
The BIM execution plan

The "Bim execution plan" has to be considered not only as a key document but a key moment to clarify with all of the stakeholders, the BIM expectations.

Three aspects of the BEP:

- The "Bim execution plan" or the "Bim protocol" (NEC Contract) can be required by the Client in the "Terms of Reference". In this case, it is a contractual obligation to proceed through the design plan and the design schedule.

- For the C.E. process, the BEP is additional to the Project Management Plan. The QA/QC system is impacted.



NRL in La Réunion

L2 Motorway in Marseille

- But the BEP is also a communication's documentation: to develop with the design team or the construction team how to save some benefits from the BIM, and to define with the Client what is the added value expected. Usually, the time to spend for the BEP creation, is largely underestimated.

In C.E., the BEP becomes the comprehensive way and tools of the project management.

Model Review and Project review

An Infrastructure project combines a large number of heterogenic models and tools to be associated and integrated. The Model review and the Technical Project review must be considered as two very different steps, in a process of C.E.

The model review is integrated within the QA/QC process, and resolves in one time, the design quality and the models integration quality. For C.E.,it can be done in any time, to check each design progress. For an infrastructure project, to have a view of the project integration, it is needed to proceed to a dedicated 3D model integration in a specific tool, which is no more an authoring tool. The Bim Coordinator proceeds to this integration and activates the QA/QC processes.

The Project review must be prepared in a very different way, even if it is based on the same 3D models and the same integration tool. A BIM project review must be focused not on the 3D aspects but on Contractual issues and constructability. The BIM manager role is to associate any issues detected during the Model Review to a contractual information or requirement, in creating metadata and monitoring relating to the Contract. The BIM navigation needs to be organized by contractual issues allocated by the 3D model viewer.

metadata and standardization

The Perspective of the BIM level 3 for Infrastructure projects requires solving at least two main issues:

- A full modeling of the infrastructure, including the underground with interoperability between the various domains, including geographical information.

- The possibility to have a full integrated meta data management, (versioning and status) at any stage of the project.

This last issue seems a realistic perspective in the shorter term than the full 3D objects integration. But the cost saving for all the stakeholders could be very profitable.

GOLD LINE in DOHA

With the current construction boom in Qatar, Egis Rail teamed up with Louis Berger in the Project Management of the Qatar Integrated Railways Project. This will be a very challenging role for EGIS Rail since the Qatar Rail has initiated the use of BIM Building Information Modelling in all its current and future projects. With experienced BIM Coordinators, Egis Rail is assisting Qatar Rail in implementing BIM Plan as per the Employers' requirements. Checking and validation of the BIM models as submitted by the Contractor, making sure that BIM uses are strictly adhered to and follow the Standard, Methods and Procedures as mandated the Client.

1 MINnD: "Modeling the INfrastructures INteroperable INformation in n Dimensions" is a French National Research Project, sponsored by the Ministry of Environment and Energy (MEDDE) http://www.minnd.fr/

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NBS BIM Toolkit to support enhanced EIR

Stephen Hamil, Director of Design and Innovation at the NBS, describes how the NBS BIM Toolkit is used to support Employer's Information Requirements (EIR)...

A set of Employer's Information Requirements (EIR) is a key document in the UK 'standards' (PAS1192-2) for anyone working to the Level 2 BIM process. It is intended to be part of the wider tender document set for the procurement of the Design Team and the Constructor and sets out clearly what models will be required at each stage of the project and what the purposes of these models will be.

The core purpose of an EIR is to document the information requirements and also to establish the information management requirements. This document forms the basis upon which the bidders can then respond with their outline BIM Execution Plan (BEP). The BEP demonstrates how, if successful, the bidders will deliver and manage this digital information throughout the project.

Figure 1 below shows the suggested structure of an EIR as published on the HM Government's BIM Task Group website.

As can be seen from Figure 1 the EIR establishes, from the outset of the project, a whole host of issues and responsibilities that will run through its lifetime. By providing this guidance at an early stage this should enable bidders to remove allowances for 'don't knows' within both cost and programme – working towards meeting two of the primary objectives of the Government's construction strategy to which BIM is an important contributor.

A template EIR with embedded guidance may be downloaded for free from the BIM Task Group website. This may then be adapted to form project-specific requirements for each of the sub-sections.

From June, the free to use NBS BIM Toolkit should be used to generate the content for sub-section 1.1.4 of an EIR, which deals with level of detail. The toolkit defines the specific information requirements that are aligned to the project stages that the bidders and then project team subsequently build on through the digital plan of work.

1.1 Technical	1.2 Management	1.3 Commercial
1.1.1 Software platforms	1.2.1 Standards	1.3.1 Data drops and project deliverables
1.1.2 Data exchange format	1.2.2 Roles and responsibilities	1.3.2 Client's strategic purposes
1.1.3 Co-ordinates	1.2.3 Planning the work and data segregation	1.3.3 BIM-specific competence assessmentFigure 1 – Structure of an EIR
1.1.4 Level of definition	1.2.4 Security	
1.1.5 Training	1.2.5 Coordination and clash detection	
	1.2.6 Collaboration process	
	1.2.7 Health and safety/CDM	
	1.2.8 Systems performance	
	1.2.9 Compliance plan	
	1.2.10 Delivery strategy for asset information	

Figure 1 – Structure of an EIR

Figure 2 shows typical tasks in the Toolkit, which the user may adapt to the specific project needs. This information can then be exported into a digital format for re-use, and also a Microsoft Office format for ease of insertion into an EIR document.

The client's high-level 'plain language questions' may be added into this section of an EIR. This gives further clarity to the supply-chain in terms of the specific questions that need to be answered at each stage of the project. Some of these questions may be quite simply referred to against any tasks or deliverables within the information requirements. However, for other questions the complexity of the information required to answer is probably best provided by the expertise within the supply chain.

Figure 3 shows a simple relationship between a 'plain language question' and a task. Figure 4 shows a complex relationship between a plain language question and a task.

Example template 'plain language questions' may also be downloaded for free from the BIM Task Group Labs website. http://www.thenbs.com/BIMTaskGroupLabs/questions.html .

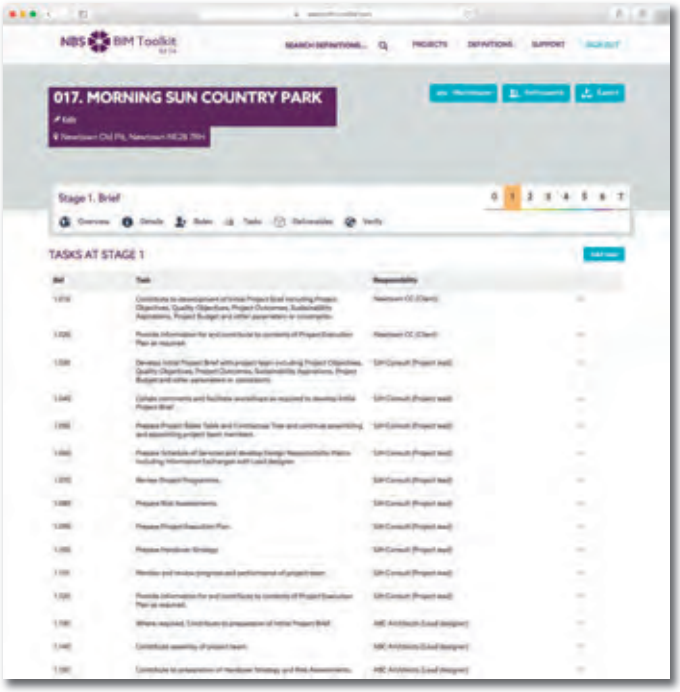

Figure 2 – Exporting the information from the digital plan of work

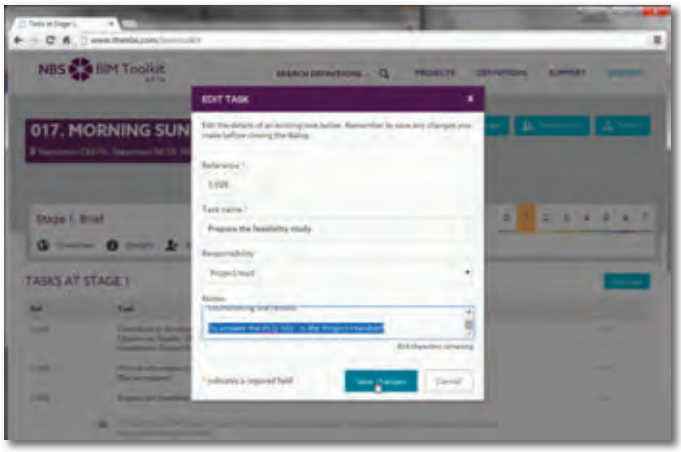

Figure 3 – A simple one-to-one link between PLQ and Task

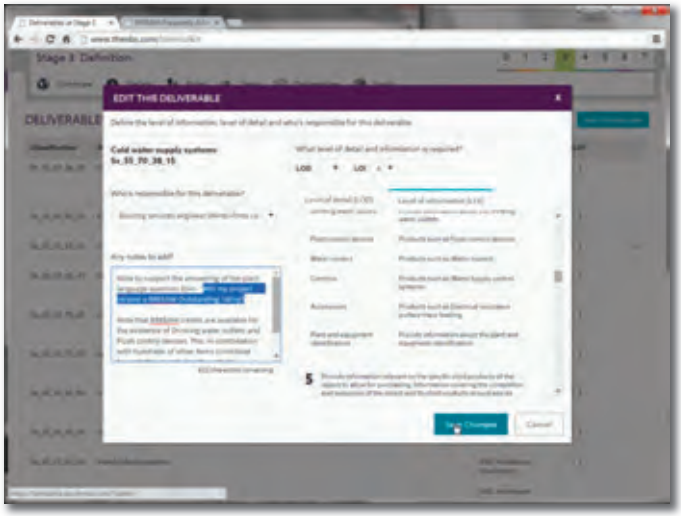

Figure 4 – The far more complex plain language question to answer

The role of the NBS BIM Toolkit is not to pre-link each potential plain language question with specific tasks and deliverables. However, it does give an excellent base framework through the combination of the digital plan of work tool and the associated level of definition templates. ■ www.theNBS.com/BIMToolkit

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www.twitter.com/TheNBS
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Are you ready for BIM?

Established in 1989, Man and Machine is part of a pan-European group, operating in 11 countries, with over 750 staff and over 500,000 installed CAD seats. We provide expertise in digital design and data management with over 60 years of combined technical experience and extensive industry. Our specialist knowledge has allowed us to develop a wide variety of services that address the needs of our customers' across multiple industries to enable them to design, visualise, and simulate to the highest standard.

Our goal is to help you optimise your design process. Whether you are in the architecture, plant or construction industries, we have the experience to understand your business and what you are trying to achieve, and we have the expertise to enable you to do it better.

It takes many activities and skills to bring the ideas and designs of Architects/Engineers to fulfilment. Building Information Modelling (BIM) attempts to standardise the creation and exchange of information to make the design, construction and operational management of a facility or infrastructure asset more efficient.

It is important to note that BIM is not just about buildings, but in its wildest context is being applied to facility, building, road, railway, and infrastructure projects. It is also now very much impacting organisations throughout the supply chain including manufacturers, fabricators and interior designers.

The word 'building' in itself also doesn't necessarily describe the full scope of a project – it doesn't cover policies, assumptions, strategic decisions, supply chain, specification, user assessment, regulation and recycling sustainability. All are key parts of the projects 'information model' and should be included in the creation of the facility or asset information as the project progresses.

BIM covers all aspects of the project lifecycle and is being driven by UK Government, to ensure that all public sector projects are under-pinned by the creation, collation and exchange or shared 3D models and intelligent structured data that is attached to them. UK Government has defined a minimum requirement for Level 3 BIM by 2016, which defines a series of domain models and the provision of a single electronic environment to store shared data and information.

With the enormous amount of data and press available on the subject, making the right choices to begin your own BIM journey and maximise the return on your investment is critical. Man and Machine offer a variety of solutions and services to help you understand the impact of BIM and the market opportunity that it presents throughout the supply chain. The solutions and services include BIM-based products, modelling and measurement solutions, BIM deployment programs, training and consultancy.

Contact us today for more information, call 01844 263763, email marketing@manandmachine.co.uk, visit www.manandmachine.co.uk/BIM or @ManandMachineUK on Twitter.

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Connect with us

How to move faster, collaborating in the cloud

Steve Jobs loved the discipline and productivity of small teams. In an interview with Fast Company, Apple CEO Tim Cook was asked how he keeps Apple effective, fleet and non-bureaucratic. Cook said "It's harder and you are fighting gravity... We've turned up the volume on collaboration because it's so clear that in order for us to be incredibly successful we have to be the best collaborators in the world."

Poor collaboration has set many government projects on a path to failure, often with legal disputes and exploding costs en route.

One of the largest disasters was of course the NHS IT program that cost around £10 billion, but the same problems with collaboration sap time and money from many construction projects.

Troubled projects often seem like chaos, and it's a fitting description. Chaos theory shows that surprising complexity can emerge from very few, simple rules. This means that even if a project launches with a good plan, the right direction and the right contracts, it will often go badly off course. The only way to keep it on track is by maintaining seamless collaboration and complete clarity from start to finish, so the inevitable array of problems can be killed quickly.

It's often easy to see in hindsight that a lack of collaboration was key, but the solution is to enable the team to work together in the cloud from the start. This doesn't just avoid problems, it enables greater productivity, smarter solutions and a less stressful environment.

Adoddle is the cloud-based collaboration platform used by many of the most challenging projects, from London's Leadenhall building (the cheese grater) and Heathrow Terminal 5 (the UK's largest free-standing building) to the £20b Crossrail project.

Adoddle has quickly become the collaboration platform for many of the world's largest infrastructure projects, from Dubai International Airport to major rail infrastructure projects in Sydney and Hong Kong.

Stop waiting for information

There is no secret to Adoddle's success. It simply uses the cloud to solve the age-old problems of collaboration. Like a chain of people all waiting for information from each other before they can proceed with the next task. With Adoddle, everyone can access all the information they need in the cloud, at any time, from any location. This also reduces risk as everyone accesses the full original information. During the construction of New York's Citygroup Centre, key joints designed to be welded were instead bolted. Experts predicted that a storm could topple the building, damaging 100 city blocks.

Stop email killing your productivity

Email transformed productivity when it first arrived, and has been gradually diminishing it ever since. We have all felt the frustration of dealing with endless emails instead of getting

things done, and struggling to find the files we need. Email is a terrible way to store and organise information, with endless strings of comments and attachments, but few clear action points.

Adoddle converts this chaos into highly organised information, with clear tasks and deadlines assigned to specific people. Many of us are tied to email like a ball and chain, and copying information into other applications can be a chore. To get around this, Adoddle adds a button to outlook, to quickly transfer information, so a monstrous string of emails becomes an actionable list of tasks.

The same Adoddle button appears in Word, Excel and Powerpoint, to quickly send files to Adoddle, where they can be shared, discussed and attached to tasks.

Get control through clarity

Another big nail in the coffin for chaos is the ability to see exactly what's happening at all times. Weekly or monthly reports from contractors are fine as long as they are always positive. Otherwise finding and fixing the problem or isolating the bottleneck is a tough task, particularly when contractors reports may be designed to hide them. With Adoddle, the project manager can see the progression of all files, forms, tasks and models and all the relevant conversations.

A customisable dashboard enables a high-level view of progress at a glance, and when there's a problem it's easy to drill down and identify it, before it becomes a bigger problem. Just as everyone on the project knows what they need to do and by when, project managers know what's causing delays and who to call, without having to trawl through any ambiguous reports.

Collaborate better, for smarter solutions

Saving time, money and stress are the obvious advantages of a cloud platform like Adoddle. But the most valuable advance is that it enables more seamless multi-disciplinary collaboration. Ideas are shared more freely, which invariably means smarter, faster solutions. Steven Johnson, author of 'Where Good Ideas Come From' spent five years researching the subject. He found that the great driver of innovation has been the historic increase in connectivity and our ability to exchange ideas with other people.

When Elon Musk floated the idea of a hyperloop - a 1200km/h train operating in a vacuum tube - hundreds of engineers from firms like Boeing, Airbus and NASA began collaborating in their spare time to make it happen. Construction on a 5km public hyperloop in central California is due to start next year. Through fluid, multi-disciplinary collaboration, these teams from different companies and locations are taking on challenges that most established companies would shy away from.

Cloud-based collaboration enables information and ideas to flow faster. People can access files directly, without bothering or waiting for someone else. The project manager has complete clarity and with it the ability to quickly identify and kill problems. And most importantly, everyone involved can contribute more, achieving greater success as a team.

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Surviving the BIM revolution

Karen Alford, BIM Project Executive at the Environment Agency discusses how industry can adapt to the BIM revolution by utilising the standards and data currently available...

I recently read one of Charles Darwin's quotations from 1809; "It is not the strongest of the species that survives, nor the most intelligent but the one most responsive to change". Is it going to be the most adaptable organisations that survive the BIM revolution as it's introduced to government led construction projects in the UK?

Unlike most other industries construction has not changed significantly for many years and up until this point has escaped the need to react to changes in customer demands which can throw their whole business model into a state of disarray. The landscape of the retail industry has changed dramatically this century with the rise of internet shopping combined with more demanding customers with a world market at their finger tips. Many long-standing faces on the high street have disappeared, others have modified their operations to enable them to compete, and new ones have emerged to be global leaders.

I recently attended a ThinkBIM session in Leeds and learnt about how Hobson & Porter responded to an East Riding of Yorkshire Council BIM model driven

tender for a new fire station for the Humberside Fire Rescue Service at Clough Road in Hull. The SME was daunted at first but embraced the challenge and recognised the opportunity for them to understand what it meant for their business, their supply chain and most importantly, delivering a project in a different way for the benefit of their client.

The Government Construction Strategy 2011 set out some challenging efficiency targets and these were built into the Construction Strategy 2025. Industry leaders agreed to deliver a 33% reduction in whole life cost of built assets, 50% reduction in time from inception to completion and 50% lower emissions by 2025. These ambitious targets will not be achieved by simply adding a piece of software or two to existing practices, but I am fearful that some within the industry still believe this alone is going to deliver Level 2 BIM and modernise the industry.

The retail industry uses technology and data analytics in many ways to better understand their customer needs. Tracking customer movements within a store to improve layout is common place and we have all noticed how seasonal stock appears when certain weather conditions prevail. As a customer we can track the location of our parcel at any time of day wherever it may be in the world. Although the application and deliverables will be different, as a construction industry client, we expect to progressively benefit from the innovative use of data combined with a range of technological solutions to provide a comparable service.

The government continues to forge ahead with its digital agenda to improve and modernise its own operations, make it easier for others to do business with, and save £33bn from the public purse. The Level 2 BIM deliverables are all about making it easier for the construction industry to do business, sharing data and information, and building on what others have created rather than re-inventing what already exists.

The effort involved in exchanging documents and information can be surprisingly large. The Environment Agency exchanges about 10,000 documents within projects via its project workspace every month. It can be difficult to comprehend just how many transactions occur within a business and if these are not managed efficiently it can be a costly affair.

"The Level 2 BIM deliverables are all about making it easier for the construction industry to do business, sharing data and information, and building on what others have created rather than re-inventing what already exists."

The BS/PAS 1192 suite of standards set out a framework, which if adopted, allows the industry to share data and information in a common way, using common naming conventions and exchange methods. Most client and supplier organisations use some form of project workspace, which is likely to be configured slightly differently and with a range of working protocols slightly tailored to each customer. This type of back office activity creates a cost burden to the business. If the PAS 1192 approach is implemented at an organisational level it provides a common workflow and assurance methodology which is good practice whether a customer formally requests it or not.

There is much debate around COBie, which is part of the PAS 1192 suite of standards. However, in its simplest form it provides the functionality of an issues sheet, commonly used within the industry, but with

The Roding Flood Risk Management (FRM) Strategy for flood alleviation in Woodford

the added benefit of a structured schema to allow the client to manage their data and information more efficiently, and takes us all one step closer to a Digital Built Britain.

The starting place for building information models is to get a handle on how data and information is currently used within your business and the processes deployed to support it. The full benefit of technology can only be realised when it is treated as part of a wider business change programme, and existing roles and activities are reviewed and adapted to seek out the new opportunities operating in a digital environment and what this can bring to a business and industry.

Government driven BIM is providing the pull but is the industry gearing itself up to give the push? ■

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Advancing BIM for **comprehensive project delivery**

New tools are empowering designers to explore new materials, builders to take advantage of innovative construction methods, and entire project teams to deliver better performing projects.

BIM, there is no turning back. It is no longer a question of why but how do you best take advantage of BIM? What's your take on BIM? BIM is about integrating data, people, and processes in a unified environment.

Technology is the enabler and supports BIM processes. Today we are seeing projects delivering a return on investment in BIM when our users integrate people and processes, and are supported by appropriate technology.

The new Abu Dhabi Midfield Terminal Building project is a great example of a BIM-driven approach. This approach is fundamental to facilitating the delivery of this extraordinary project through its lifecycle - and is helping to minimize risk and ensure project success. In this project, the Consolidated Contractors Company, part of the TCA Joint Venture of TAV, CCC and Arabtec, managed to reduce the cycle of critical RFIs from 28 days down to 2 - 7 days. They saved USD 1 million and 51,000 working hours by resolving clashes between just the façade and other disciplines.

How are you supporting your customers in their BIM journey? Cadventure, a partner of Bentley Systems provides software and services that empower multi-discipline project teams to advance to what some call BIM Level 2 by facilitating optioneering as well as enhanced project delivery. Among these offerings are OpenPlant, AECOsim, and OpenRoads. Secondly, being able to collaborate and share information throughout the project lifecycle regardless of asset types is paramount. Bentley's ProjectWise has long been the recognized industry standard for work sharing for design integration. Just two months ago, we launched ProjectWise Essentials, which we like to think of as "ProjectWise for everyone." With ProjectWise Essentials, organisations of all sizes can now get immediate access to ProjectWise capabilities. It is fully provisioned as a "software at your service," providing cloud-based access to ProjectWise and incorporating industry standards such as BS 1192 workflows, best practices, and processes based on our experience in working with larger organisations.

We also understand that projects vary in size and complexity. Bentley's R&D team is committed to delivering solutions that are scalable in terms of the multidisciplinary project teams engaged in the effort, project size, project complexity, and geographic distribution.

With Bentley's proven technology and LEARNservices, they help users address their design, engineering, and construction challenges. For example, The Crossrail-Bentley Information Academy was launched as part of a technology partnership with Crossrail, Europe's largest infrastructure project.

The Academy, located in Bentley's U.K. headquarters, educates participants in the people, processes, technology, and workflows required to achieve the Crossrail target of delivering a worldclass asset, and is one of the innovative initiatives helping Crossrail become among the first organisations to reach BIM Level 2.

The challenge for any organisation is to get the most advantage of constructible models? How do you respond to that challenge? The mission is to help users gain more visibility into the path of construction. That's why the focus is on improving information mobility, construction modeling, and industry interoperability. For example, Bentley is collaborating with Trimble to deliver realworld solutions that will transform the design to construction workflow - by enabling greater information mobility through ProjectWise CONNECT Edition and Trimble Connect platform.

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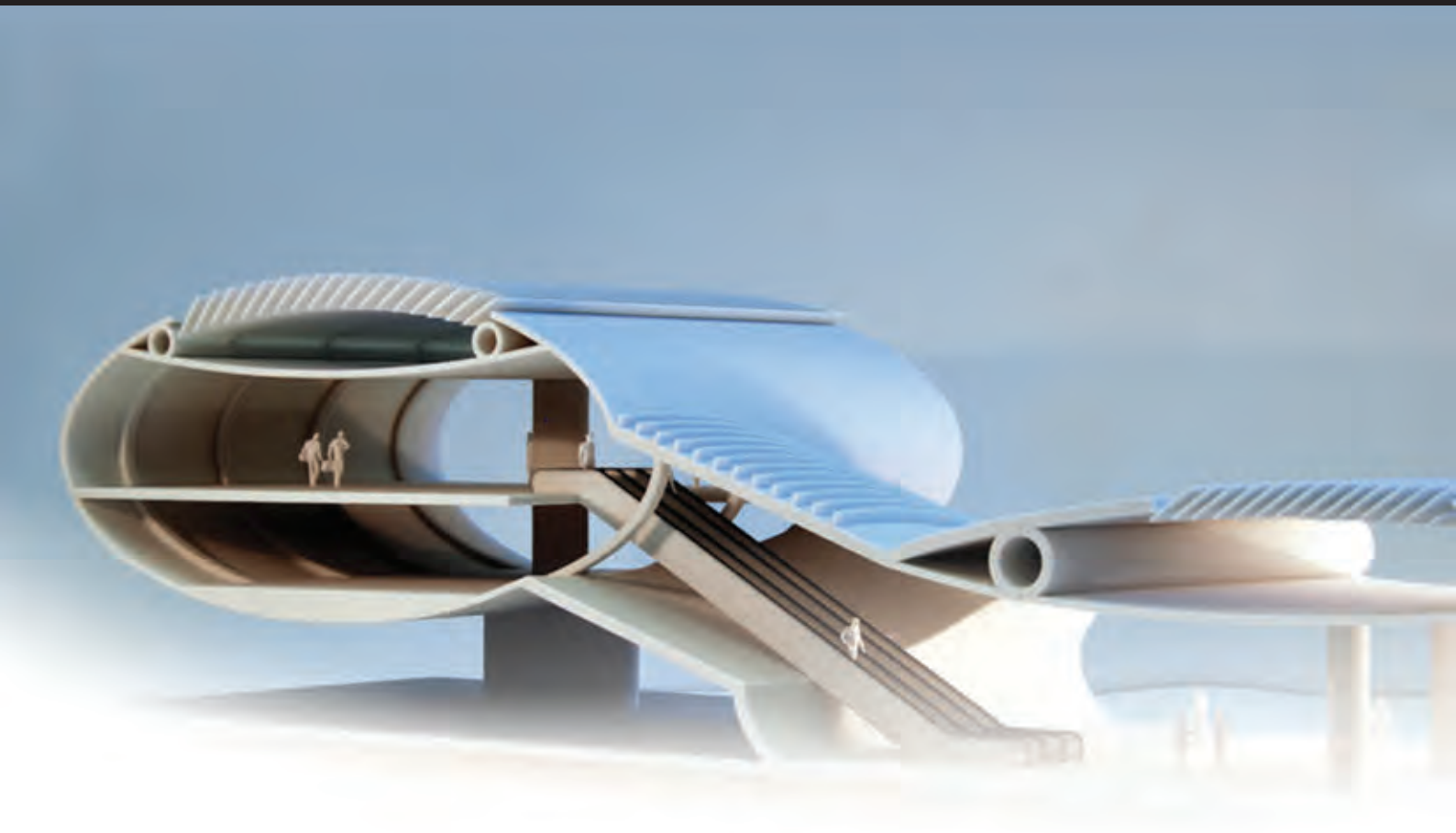

Doing BIM?

Whether you are just starting your journey into BIM or if you are looking for your next step, Cadventure can help guide you on the right BIM strategy for you by offering:

- BIM process – Best practise
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- BIM training – from introduction to advanced level
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BIM4FitOut – Tools of trade

Mark Norton, Chair of BIM4FitOut and ISG's Head of BIM for Fitout and Engineering Services describes the latest tools on offer to encourage and assist those embarking on BIM implementation...

During 2014 and so far in 2015, we have seen a marked change in Building Information Modelling and its take up in the fit out marketplace. Client awareness of the benefits of using BIM have manifested themselves in detailed scopes (Employers Information Requirements or EIR's) and this has duly been adopted by certain Tier 1 contractors.

BIM by its nature is built on collaboration, shared goals and shared responsibility; this should be born in mind with any undertaking. A team effort where you can be supported whatever your experience, is one of the cornerstones in the way we operate BIM4FitOut.

The BIM4Fitout aim is to share knowledge across its members and aid, assist, and promote supply chain engagement with its own BIM journey.

We are currently developing and promoting three exciting tools for the supply chain – moving the BIM agenda forward.

The BIM Workbook

An important launch tool set to get supply chain engagement, increase awareness and capability is the BIM4FitOut workbook.

Its primary goal is a simple approach on developing a capability from scratch – to deliver a BIM project, explaining the terminology used, various acronyms and abbreviations, current guidelines, relevant British Standards, and practices within the industry. As well as being a 'what document' it is also a 'how to document' clearly taking a specialist contractor though the steps of delivering a BIM implementation plan.

Mark Norton MIET LCIBSE,Chair of BIM4FitOut and ISG's Head of BIM for Fitout and Engineering Services

Supply chain support is paramount and the workbook will deliver solutions and answers to common frequently asked questions in an easy to understand language and format. This source of information will then allow the reader to put together a roll-out plan or strategy for BIM implementation.

The workbook which has been supported by CITB will be available for all specialist contractors across construction.

BID4Free

BID4Free is an exciting initiative to give BIM 'newbies' a free to use web based platform to tender and bid for projects with a BIM content.

Dr Jozef Doboš from 3D Repo is developing a common principle web based software application that requires no specialist technology – a simple laptop will suffice. In addition, no specialist training is needed to use the software. It is an intuitive application, easily adopted by the user and productive – giving measurements, quantities and a viewer. The software will allow anyone to tender on a BIM project, on any machine or tablet in any browser, and importantly, it will be fully encrypted allowing for confidentiality.

Minimizing any financial outlay for this is a significant benefit as the software is free at point of use by specialist contractors. This will start to give an idea of what to expect from a model and how to operate it – aiding and enabling supply chain members to interrogate, assess, and price projects that they may well have been excluded from previously.

3D Repo have already tested the software with members of FIS and expect that by March 2016 it will be fully deployed.

It has been stated widely that if SMEs (in this case individual subcontractors) do not engage with BIM, they could well be left behind and lose a great deal of business. This software could be a saving grace for many in the industry.

BIM capability

BIM capability within the supply chain is an important area when assessing skill levels and competency. These can be awash with technical questions, process interrogation and a bewildering array of acronyms. We as a group are developing a Compliance Questionnaire to assist in this common form of assessment used by Tier 1 contractors. Our questionnaire will use a 'plain language' approach, reducing the potential for confusion and simplifying the 'tech talk' to an easy, more palatable level to the newcomer.

This will not only aid the supply chain member with what knowledge and technology may be required, but also give a solid idea of where they may be and what training is necessary to raise their profile to the next level.

This plain language capability questionnaire has relevance and importance with Tier 1 contractors – it allows them to assess during pre-qualification enquires and at tender stage. ■

BIM4FitOut was formed by FIS (the Finishes and Interiors Sector) to address the impact of BIM on the fit out and finishes sector. As a government's BIM Task Group partner, the group aims to ensure that the sector supply chain is ready for this new way of working.

Mark Norton MIET LCIBSE
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Large scale refurbishment and retrofit using BIM

Is it worth it?

Neill Ryan is CEO of VRM Technology (VRM), a software company based in London and Dublin that provides a cloud based collaboration and invoice management platform, Refurbify, to the construction industry. Integrated mobile survey apps allow property surveys to be completed and once uploaded to the cloud will produce whole property 2D plans, 3D models, schedules of works, bills of materials, works budget costings and much more automatically in real-time! Live works can be measured and monitored using smart phone based evidence of use apps that track progress in real-time against planned works and specified products.

VRM has spent the last 2 years working on private and government backed construction research projects that cover many different types of technologies and processes from pre-works through to the final delivery stages. This has given the company the opportunity to collaborate with leading industry organisations and learn how technology is currently used (or not used) in the domestic refurbishment and retrofit market.

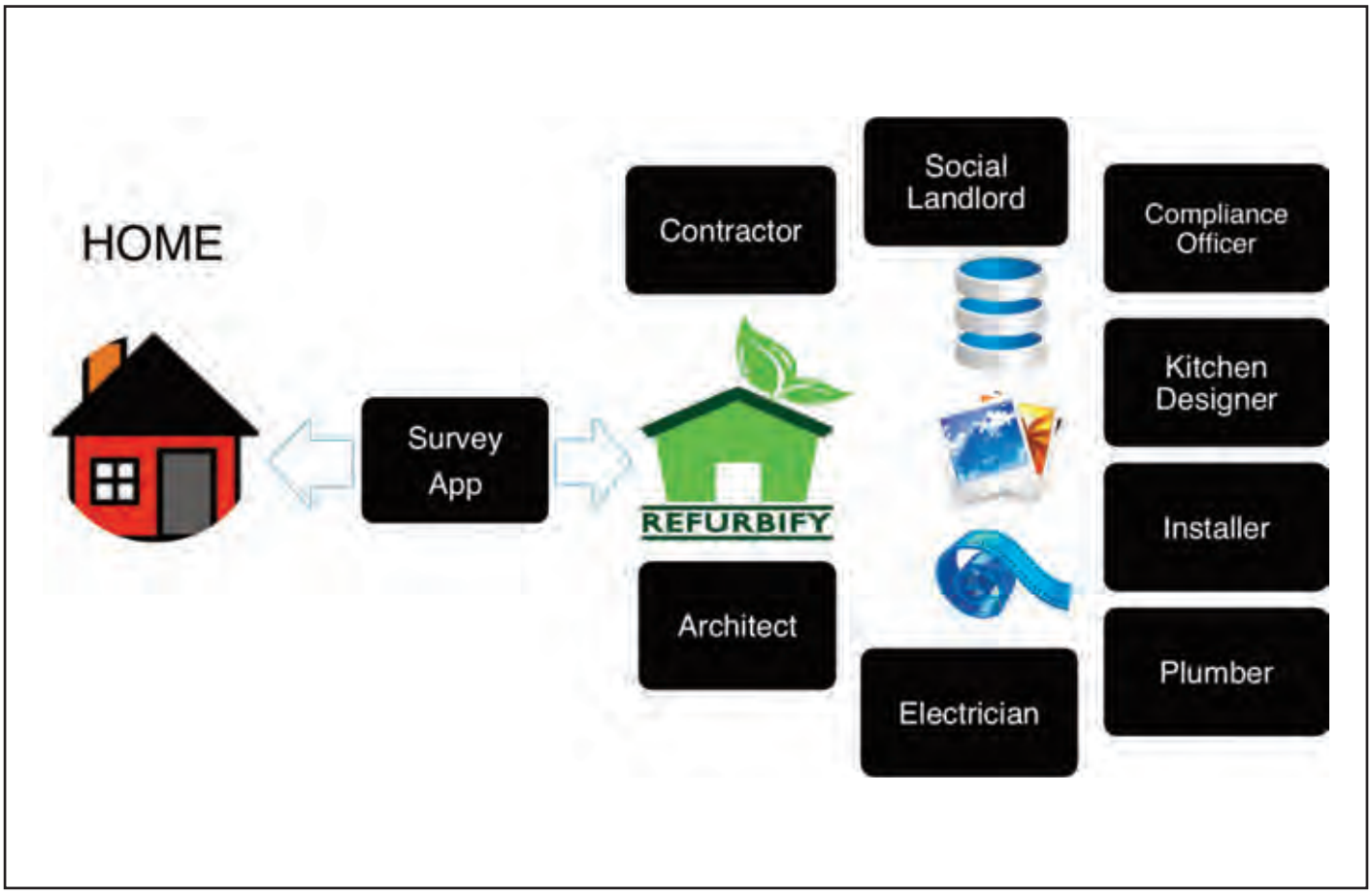
The most interesting of all the topics covered is BIM and its use in the refurbishment and retrofit markets. When the value of the works at hand are generally less than it might cost to produce useful BIM models, one has to ask the question, why use BIM at all?

While there are benefits of BIM for all the parties in the construction supply chain, for the purpose of this article lets start with a medium sized social housing provider with limited budgets, increasing annual maintenance costs, tenants not paying the rent due to high energy costs and a desire to retrofit or refurbish to resolve these issues. Due to the high costs of the type of retrofits required to adequately achieve these goals there is a huge emphasis on the quality of works. This is required to make sure that the reduction in maintenance costs and energy costs will be sustained for the projected life of the works installed. So how can BIM help here?

Using a survey tool such as Refurbify, whole property surveys have been captured either during one visit or smaller surveys completed during ongoing maintenance visits. The difference with these surveys compared to those currently captured is that they have the end goal in mind. The costs, the products, the labour and the time that is required to perform any chosen measures on properties that that are being surveyed.

"VRM has spent the last 2 years working on private and government backed construction research projects that cover many different types of technologies and processes from pre-works through to the final delivery stages."

Once this data is captured, an IFC model of each property is immediately available on the Refurbify cloud. This model can be instantly queried to provide estimated



schedule of costs and durations for any work measures that are of interest. Contractors can be sent a link to IFC models, along with associated tagged information such as photos and videos, specified products and labour skills. Costs and products can be agreed and added directly to the system so that the BIM data is updated accordingly.

"Even the small tradesman can play a part in updating the BIM information by confirming their tasks have been completed and taking photos of their work and products use via a smart phone and a mobile app."

Once the works have been decided the agreed BIM information can be used to schedule the works and monitor them in real-time. Products can be scanned onsite and referenced against the specified products, the duration of tasks can be compared pro-actively against the planned task durations. Live costs can be compared to budgeted costs as all of the onsite data is continuously checked against the planned and specified BIM data.

Even the small tradesman can play a part in updating the BIM information by confirming their tasks have been completed and taking photos of their work and products use via a smart phone and a mobile app.

The end result for the social housing provider is that BIM gives them complete control and visibility of the process from the early deliberations of choosing which properties should be upgraded, to choosing a contractor, monitoring the essential elements of the live works, approving invoices that are automatically generated and linked to virtual evidence from the works performed.

The quality and costs of the planned works have been matched to the delivered works and the promises of ongoing reductions in energy and maintenance costs can be more certain.

For more information about VRM or Refurbify please feel free to contact using any of the details provided on our website.

http://www.vrmtechnology.co.uk/contact

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BIM – what's stopping you from starting?

As the industry moves forward, so are many companies with their BIM projects and pilots. There is however, still a reluctance to embrace the technology, with many companies dragging their heels. Less than a quarter of building services contractors and consultants are currently using products with full BIM information. Many small and medium-sized firms can be reluctant to take the next step, but the benefits are not just for the big boys.

Time savings?

There are many articles written about the advantages of BIM, but most state that the biggest driver is time savings. With all designs being held in one file, it is easy to streamline boring and repetitive tasks, allowing AEC professionals to spend less time managing documents and more designing and constructing.

But how will it change the day-to-day? Hand renderings are an extremely time-consuming, expensive activity. By using interconnected design, these crucial pre-tender documents are easier to produce and require less effort, experience and time, which result in design concept images that not only look good, but can also be used to generate drawing sets.

Which project?

Many firms will claim they are waiting for the "right job" to come along before implementing BIM. Any project that includes elevations, sections and schedules are perfect for a first BIM project. A dry run with a small, already completed project is always a good idea, minimising errors and risk before attempting a live project.

More opportunities?

It's a fact! - BIM helps organisations win more work. Healthcare, Education and publicly-funded projects will all require BIM information. Even when clients don't require the use of BIM, being able to demonstrate the ability to use BIM gives an organisation a competitive edge.

Cost concerns?

There is a common misconception that BIM applications are expensive and affordable only for large firms. This is no longer the case with "LT" versions of Revit and the opportunity to purchase desktop subscriptions, which can be rented for short or long term projects. A 2013 McGraw-Hill Construction report noted that firms that had adopted BIM experienced a positive ROI, 36% reporting an ROI of over 25%.

Why wait?

The efficiencies and benefits to be derived from BIM adoption are well-publicised. But why not tell us, what's stopping you?

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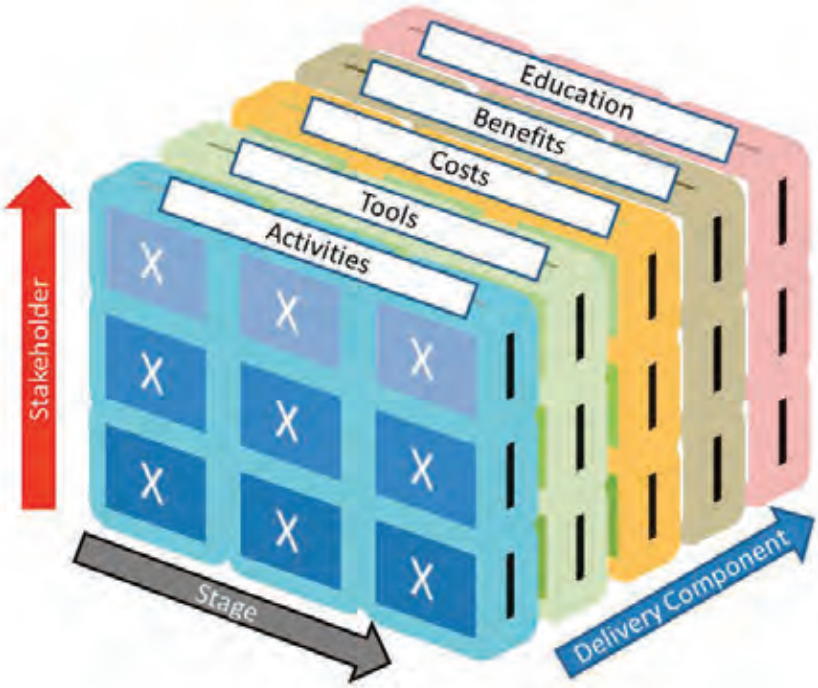

The BIM Delivery Cube

Tim Cole of Causeway and Bill Healy, Chair of the BIM Technology Alliance explain how the BIM Delivery Cube will support industry adoption of BIM, and why it was developed...

To unlock the potential of BIM we need to consider the questions that BIM adopters will face and which, without clear answers, will add inertia or become progress blockers. Questions such as:

- What do we need to do?
- What tools do we need?
- What skills do we need?
- What are the benefits?
- How much will it cost?

The challenge was to distil the answers to these questions into simple, clear and brief guidance and to present them in such a way as to provide different stakeholders at different stages in the process the insights they need.

BIM is sometimes referenced as being a process. However it is more helpful to expand the definition to embrace the key aspects upon which the benefits of BIM application depend. BIM is a technology-enabled information process that is built on collaboration and early engagement. Take away any of these elements and, although you can still make progress, the value is greatly reduced. The BIM Delivery Cube ("Cube") provides a matrix that links Stakeholders at all project stages with the aspects that need to be considered. This improves awareness; gives confidence to evolve; builds maturity; enhances collaboration and promotes adoption.

Debate stirring?

The Cube was developed to be an aid to understanding, and a mechanism to share understanding and learning as BIM adoption spreads. It is not intended to offer a single comprehensive reference but rather to be treated as an open and shared resource that helps the benefits of BIM to be more easily understood and realised. People across our industry can use the Cube to support both initial engagement and operational use. Information within the Cube should be validated against the information from practical experience and, where changes are required or

Cube Stage	Plan of Work (other terms used)
Preparation	Brief
Design	Concept Design, Definition
Pre-Construction	Technical Design
Construction	Build, Commission
Use	Handover, Operations

sections need to be updated, those changes should be shared, reviewed and incorporated. This way, the Cube remains a relevant source of information that is continually subjected to peer review.

The Cube's three axis are Stakeholders, Work Stage and Delivery Component. We have considered the guidance from the perspective of nine different Stakeholder groups (from Client to Asset/Facilities Manager), through the different Work Stages (from Preparation to in Use) and for five key BIM information aspects (Activities, Benefits, Tools, Costs and Education). The Cube has been built to allow customised views to be generated ranging from broad perspectives through to specific Stakeholder/Work Stage/Delivery Component information.

One of the most widely discussed aspects of BIM adoption relates to the cost for the different stake-holders at different stages in the project lifecycle. The Cube provides a guideline estimate, based on defined criteria and current experience. As experience grows these figures can be refined or adjusted to reflect industry averages.

It was a deliberate decision to restrict the amount of information that would be presented at each of the many data-points within the Cube. This is considered key to ensuring the Cube remains easy to use and provides clear guidance that is accessible to the widest possible audience.

In time, it may be appropriate to provide an expansion to deliver more information. However, there is a strong argument that the Cube should remain centred on providing a comprehensive summary of BIM.

The Cube not only provides insights that define the engagement plan for each individual stakeholder, but also provides the opportunity to understand the perspective of other stakeholders.

It is widely agreed that we need to support effective collaboration and early engagement if BIM is to deliver its full potential. The Cube can be used to foster this approach by providing a wider understanding of the roles and responsibilities of all stakeholders engaged in delivering successful project outcomes.

Presenting the Cube as a searchable information source has proved challenging. The data is readily available through the BIM Task Group website (www.bimtaskgroup.org) and is increasingly being used. We are currently developing a simple and highly accessible on-line version that can be queried in any set of two or three-dimensional slices. This version should increase the number of people using the Cube as well as the community value it delivers.

With the support of BIM users, the Cube will play a key role in building a BIM community that is both well informed and able to collaborate effectively. ■

The Cube can be accessed at
www.bimtaskgroup.org/tech-alliance-bim-investment-guide/

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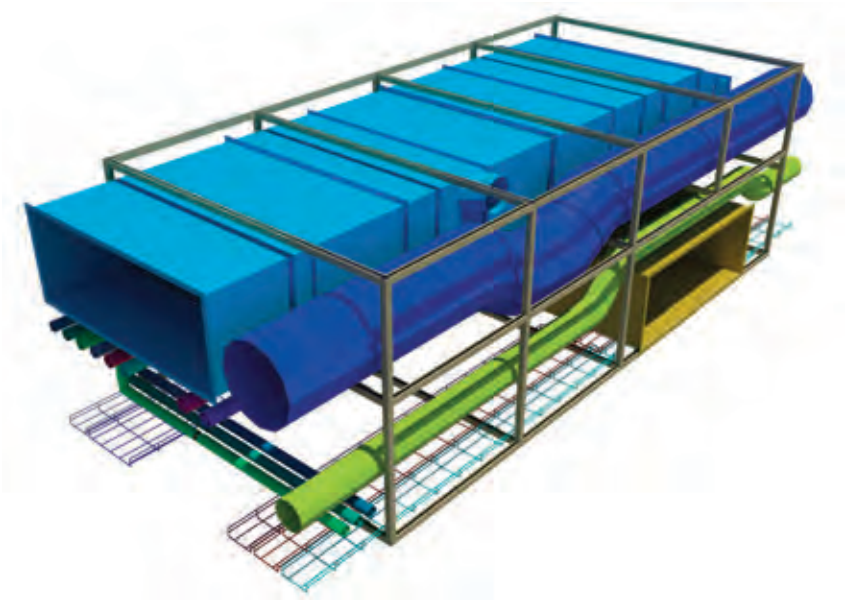
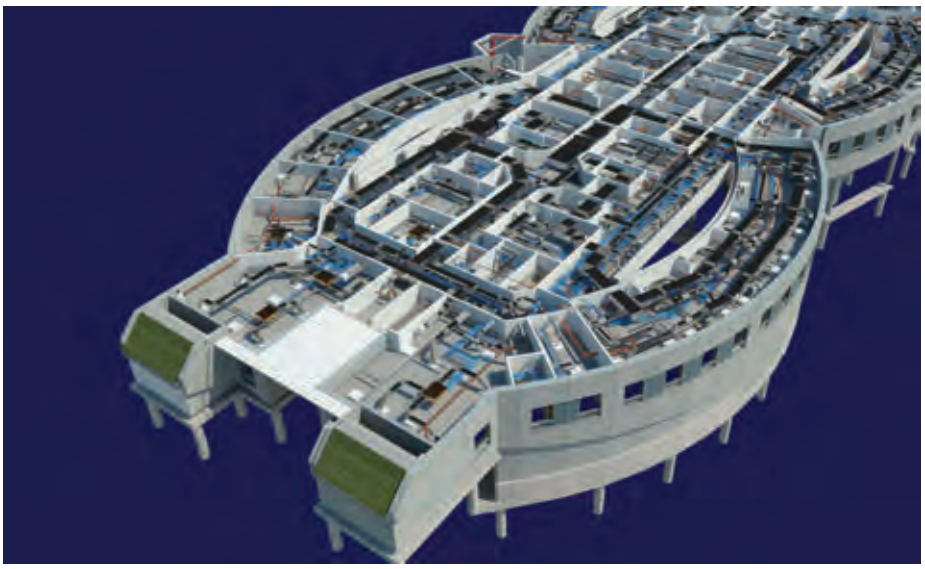
The CAD Room is geared up for BIM

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.

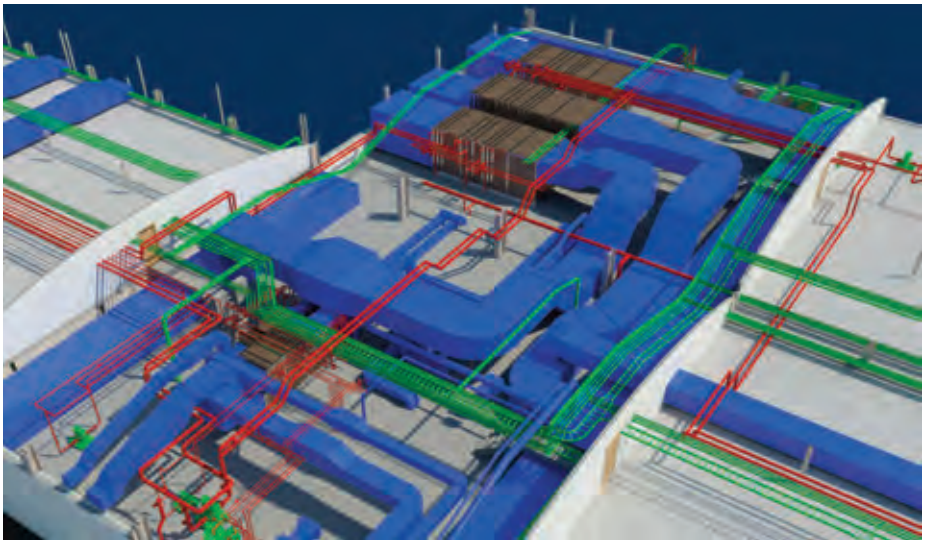
The CAD Room specialise in providing a complete integrated CAD service for any project utilising the design to produce co-ordination, fabrication, and installation drawings for all building services. The CAD Room also ensure that all services offered are totally co-ordinated with the building fabric 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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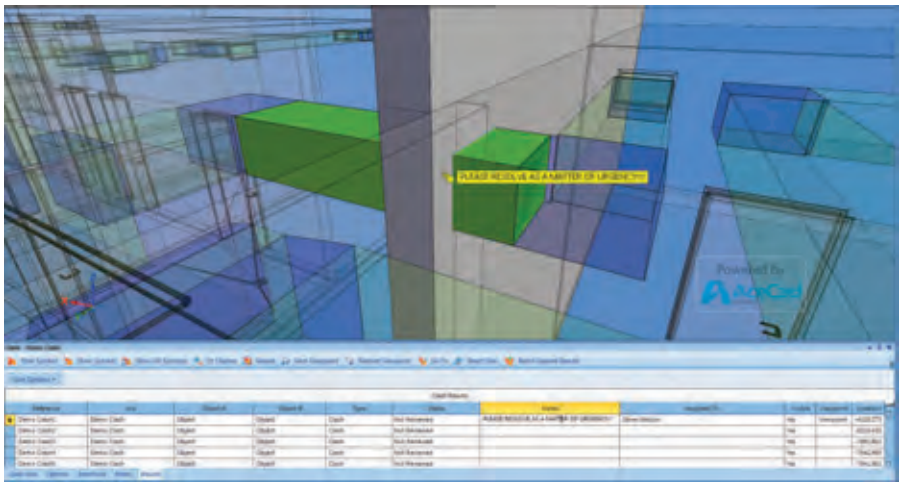
Putting BIM to work

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:

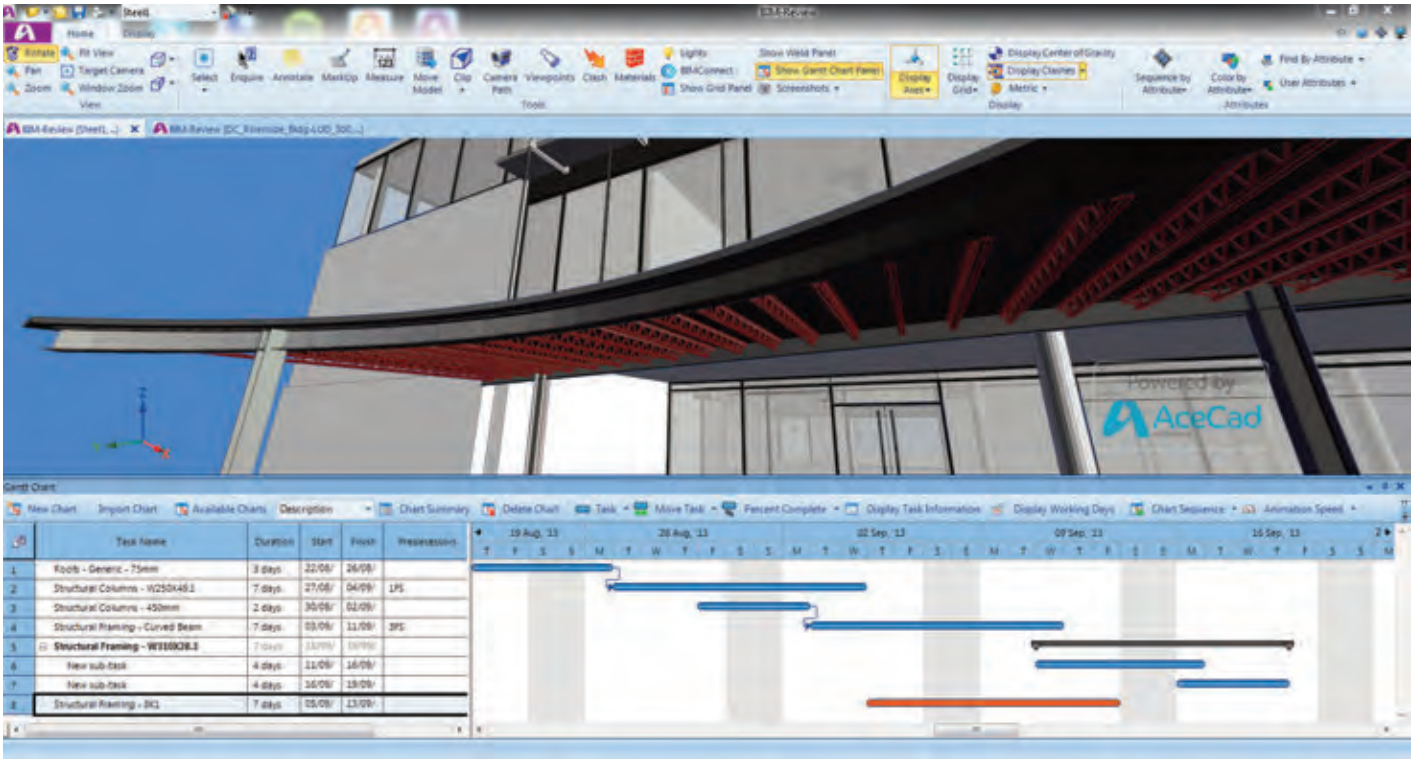
- Improved workflow through real-time access to BIM model content across multiple teams.
- Enhanced decision support through improved collaboration.
- Immediate identification of clashes and conflicts.
- Improve planning with 4D timelines for engineering, procurement, suppliers and construction teams.

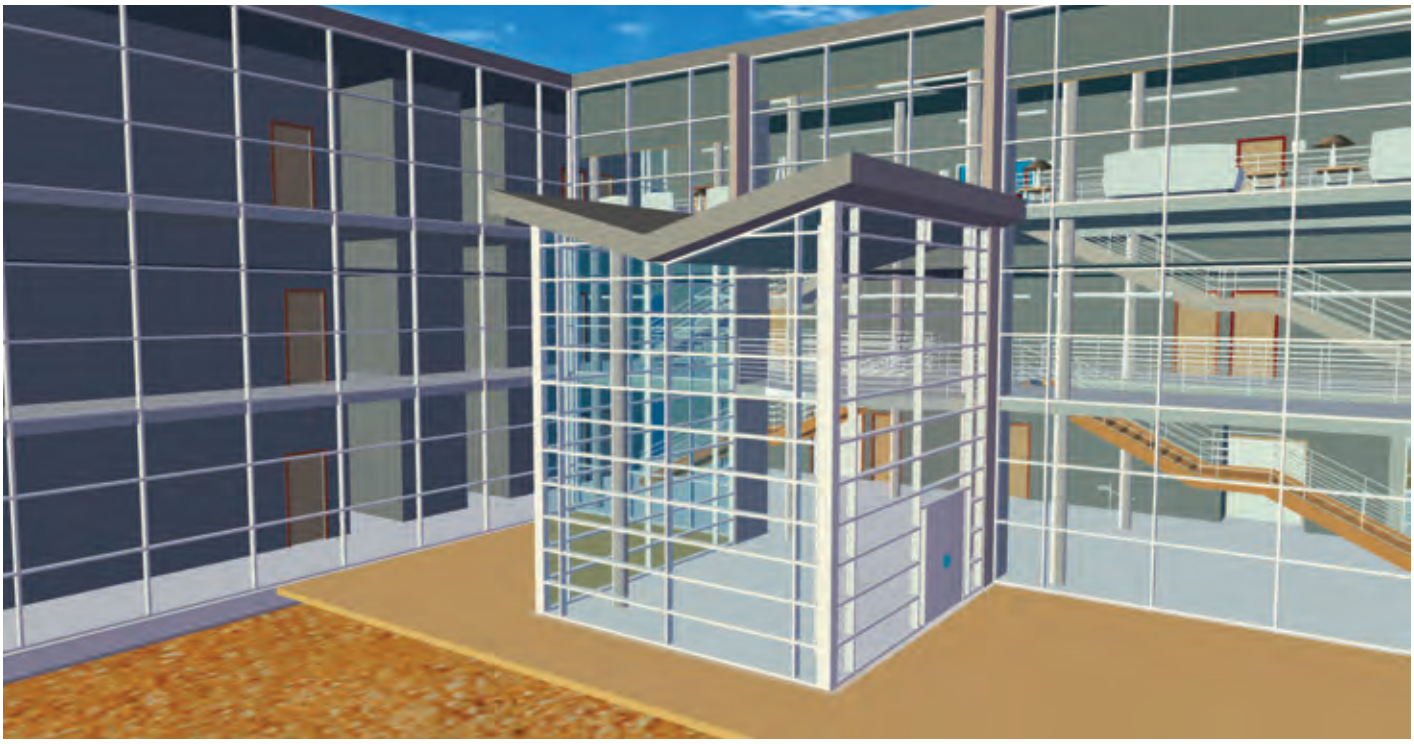
Because BIMReview enables more efficient working, it has the capability to shrink schedules and reduce the risk of overruns.

"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

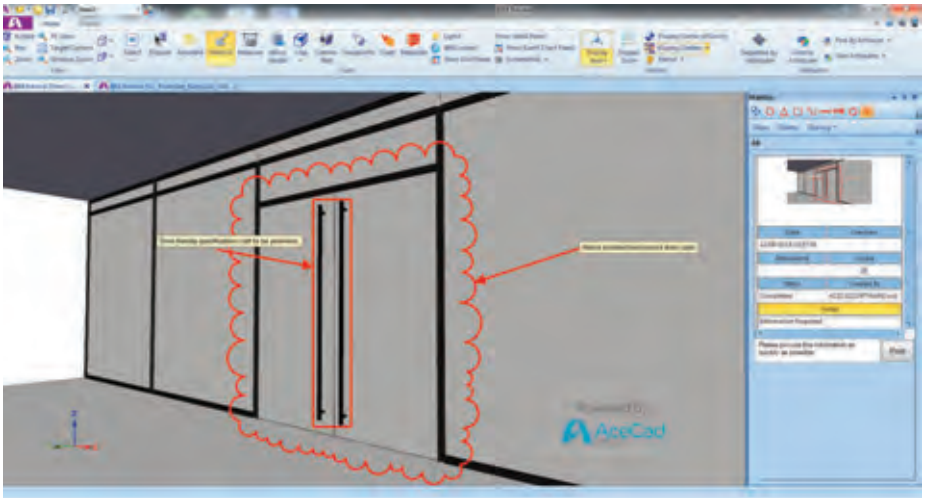
BIMReview is designed to facilitate collaboration across the project. Architects, owners, consultants, contractors, fabricators and engineers can work on a single process through the same model with a level of accuracy not previously possible. When changes are needed, everyone involved has access to 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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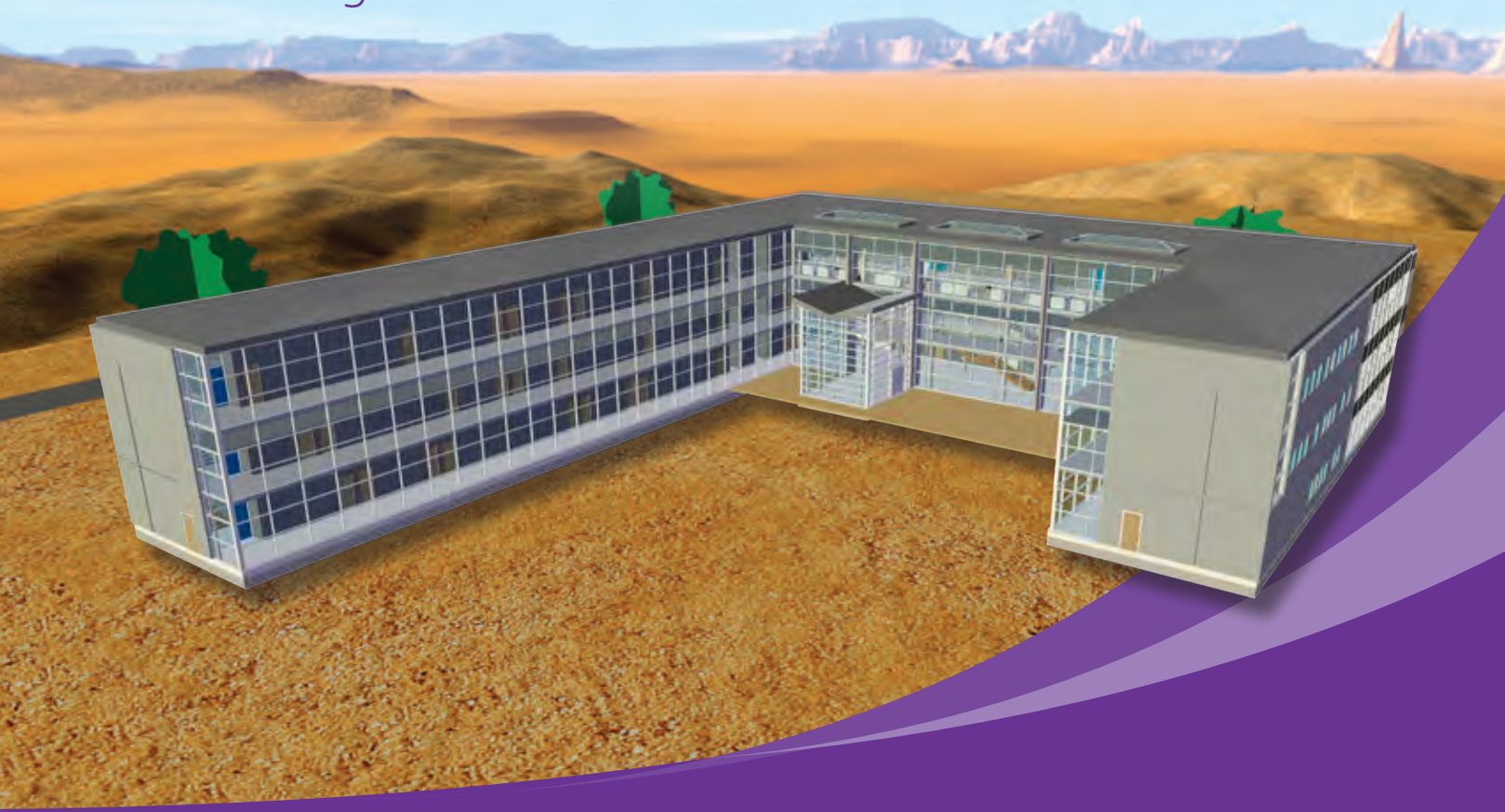
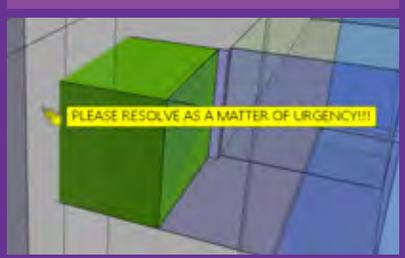
Visualise your project from concept to completion

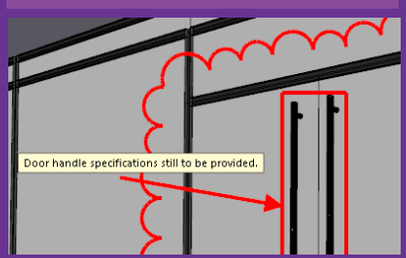
BIMReview, the affordable BIM collaborative and visual tool from design to the construction site.



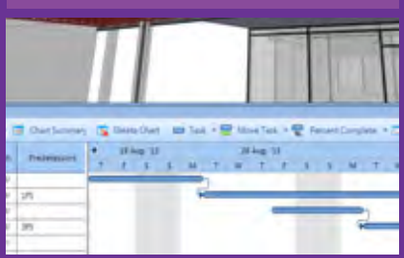
3D Clash Detection



3D Visual Mark-Ups



4D Planning



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The Information Manager and BIM

Steve Faulkner, Associate Director responsible for BIM Management at the structural engineering company Elliott Wood, and member of the BIM4SME Core Group, reviews the importance of the Information Manager...

The Government BIM Task Group is doing a sterling job in producing the BIM Level 2 Toolset. However, whilst the industry is developing their knowledge and becoming more enlightened in Building Information Modelling, what parts of the Toolset should be put into practice now?

BS1192:2007 is a good document, however, not many organisations adopted all of its recommendations. Most of us simply extracted the parts that added value; the drawing numbering. The same approach could apply to PAS1192-2, another good document, one which becomes clearer as one gains a better understanding of BIM.

We think it's imperative that we all try to adhere to the general principles laid out in PAS1192-2 but on the other hand, we do not believe that all of its recommendations are required on every project – in some cases it may actually cause unnecessary confusion.

So, who decides what should be included in the Employers Information Requirements etc.? Well, The CIC BIM Protocol, widely accepted as the industry standard states:

"The Protocol requires the Employer to appoint a party to undertake the Information Management Role. This is expected to form part of a wider set of

duties under an existing appointment and is likely to be performed either by the Design Lead or the Project Lead, which could be a consultant or contractor at different stages of the project. In some circumstances the Employer may appoint a stand-alone Information Manager. The Information Manager has no design related duties".

"As an overview, the IM's role should be to work with the Lead Designer to facilitate and document the BIM process in order to make projects more efficient from concept though to facilities management."

Considering this, the secret to successful BIM could lie with the appointment of the Information Manager (IM). After all, in many instances it will be the IM who will advise the Client and instigate the route the BIM journey will take.

To capitalise on the current situation, we have seen the emergence of the BIM Consultant. Whether the Information Management is performed by a member of the Design Team or an external BIM Consultant is up for debate. There are pros and cons for both approaches; BIM Consultants are typically more aware of government protocol, but Designers generally deliver what is required for the project in hand.

Personally, we get frustrated having to trawl through overly complicated BIM documents trying to find the important bits. BIM documentation needs to be simple and concentrate on the key features. 10 pages of important information will likely get read, 200 pages of waffle will not, and the important bits will be lost in the process.

Additionally, it's important that roles and responsibilities are agreed at the outset. We are working on a project where our initial structural Revit model was based on the Architect's version. The Services Engineer had done the same. As a team we had had planned to co-ordinate the models in the forthcoming weeks (when the models were more complete). In the meantime the IM federated the Designer's models, produced a list of every individual clash, and circulated a report indicating all of the clashes to the team for action – a complete waste of time!

As an overview, the IM's role should be to work with the Lead Designer to facilitate and document the BIM process in order to make projects more efficient from concept though to facilities management. The BIM process can be as simple or as complicated as we want it to be.

We prefer the simple approach, and using a traditional procurement route we have attempted to outline the key roles of the Information Manager below:

RIBA Work Stages 0, 1, 2 and 3
The pre-contract information management may be managed by either one of the design team or an external BIM consultant.

- Stage 0 (Strategic Definition) – Government Soft Landings (GSL) & Information Manager (IM)

The Client appoints the IM. The IM, Client, and ideally the Design Lead should then review any lessons learned from previous projects (refer to Governments Soft Landings) and sets out the BIM Strategy for the project.

- Stage 1 (Preparation and Brief) – Employer's Information Requirements (EIR) & Model Production and Delivery Table (MPDT)

The IM produces the Employers Information Requirements (EIR); detailing the specific BIM requirements and inform the team what models are expected via a basic Model Production Delivery Table (MPDT).

- Stage 2 (Concept Design) – BIM Execution Plan (BEP)

The IM produces the Pre- Contract BIM Execution

Plan (BEP) with the Design Team. The BEP shows how the requirements of the EIR will be delivered. A basic Common Data Environment (CDE) also needs to be established.

- Stage 3 (Developed Design) Model Production and Delivery Table (MPDT) & BIM Competency Assessment (BCA)

Develop the Model Production Delivery Table (MPDT) to include; models required, when, by whom and the Level of Development (LOD) expected. BIM Competency Assessment Forms are established to evaluate potential Contractors.

"Personally, we get frustrated having to trawl through overly complicated BIM documents trying to find the important bits. BIM documentation needs to be simple and concentrate on the key features."

RIBA Work Stages 4, 5, 6 and 7

Post-contract, it is suggested that the lead contractor should take responsibility for the information management. It may be prudent for the pre contract IM to be retained Client side in an advisory/monitoring role.

- Stage 4 (Technical Design) – CDE, BIM Execution Plan (BEP), Master Information Delivery Plan (MIDP)

The IM establishes the CDE for use by the entire Project Team. He then develops the Post Contract BEP to show how his Delivery Team will deliver the requirements of the EIR and include the Master Information Delivery Plan (MIDP)

- Stage 5 (Construction) Project Information Model (PIM)

The IM federates the Project Information Model (PIM) by merging all of the models as required by the MPDT. Where models have been developed by a specialist (e.g. steelwork fabrication) these need to replace the Designer's elements.

- Stage 6 (Handover & Close out) – Asset Information Model (AIM)

The IM then creates the Asset Information Model (AIM) ready for handover to FM. The AIM should be a true graphical representation of that constructed. Add metadata for maintenance purposes as required by the MPDT.

- Stage 7 (In Use) Facilities Management (FM)

PAS1192-3: 2014 Information Management in the Operational Phase introduced The 'Organisation Information Requirements' (OIR) and The 'Asset Information Requirements' (AIR). However these are for another article on another day.

Whoever performs the role of the IM, the important issue is they look at what the requirements are for the project in hand, and learn from previous mistakes. The IM should adhere to the principles of the government's BIM Toolset, using the parts that add value, but most importantly, they need to keep things simple. ■

Steve Faulkner
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Business Collaborator:

Adopt our Semantic BIM Platform today and realise the benefits for your asset's lifetime...

Data, data, data

Admit it. When you think of BIM the first thing that pops into your head is a 3D model. That's fine. You're only human. And those 3D models look really nice, so we don't blame you. But, they are only the tip of the iceberg when it comes to unleashing the true potential of BIM. We believe what's really important is the data that's attached to that 3D model.

Data is what BIM is about because every single object in a 3D model can be described by tens or hundreds of pieces of information.

When we first looked at BIM, we didn't just see a 3D model. We saw the huge potential for swathes of interconnected data held within – Open Linked Data. We saw a rich semantic web of information that described the asset.

We didn't build a 3D viewer first. We built a semantic data engine that could understand a BIM model, extract the rich asset information and give us an infinite number of ways to slice and dice it.

By building our BIM platform on top of semantic web technologies we are leading the way to the future.

Why do we say this?

Because we think our credentials speak for themselves. Founded in 1998, we were the only Project Extranet (CDE) vendor present on the leadership team responsible for the 2011 BIM Strategy Paper – leading to the UK Government BIM mandate. In other words, we've been working towards Level 2 BIM 2016 for a pretty long time!

Semantic BIM – Protect your asset's future today

BIM brings enormous advantages to construction:

- Walk through a virtual model of a building
- Identify potential clashes before carrying out any work on site
- View and optimise the construction sequence

And more – but BIM alone is just scratching the surface of what can be achieved.

Semantic BIM accelerates everything to the next level. Asset data is freed from proprietary models and stored in a web of connected data. Information can be queried, analysed and combined with both internal and external data sources, making for better and more informed decisions that are reached rapidly, throughout the lifecycle of your assets.

How do we achieve Semantic BIM?

- By communicating information needs to the supply chain
- By capturing the right data and delivering this to decision makers
- By linking together data sources for rich analysis

BIM Platform Components

Common Data Environment (CDE)

BC 6.3 – CDE for documents: a highly configurable document management, workflow and project collaboration platform.

BIM Data Server – CDE for models and data: manages model geometry and data supporting powerful searching across objects and their properties.

Process Management

BC Assure: ensures that your projects follow the BIM Execution Plan and adhere to your processes.

3D BIM Data Viewer

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BIM paves the way to success

Tahir Sharif, EMEA Director Software Solutions at Leica Geosystems gives an overview of how BIM has been adopted by civil engineers who are now seeking to identify the role it can play in their field...

Civil engineers who are regularly engaged with architects or structural engineers may already be familiar with BIM, but for those who are involved in designing roads and highways, the process is a whole new world, but one that is highly relevant now and will continue to grow in importance.

BIM helps not just in constructing 'buildings' but also in building any sort of infrastructure. It is an integrated process built on coordinated and reliable information about a project from design through construction and operations.

BIM can be considered a thought process that governs work through various stages of the project in the shape of information that stays digital, consistent and coordinated. Hence, the chief benefits of BIM are that there is no duplication of information. It is a constantly updated centralised database model and streamlined flow of information from field (survey) to design and finally to construction and maintenance/operations.

BIM and civil engineers

Implementing a BIM process for road and highway design starts with the creation of coordinated, reliable design information about the project, resulting in an intelligent 3-D model of the roadway. The elements of the design are related to each other dynamically, not just points, surfaces, and alignments, but a rich set of information and the attributes associated with it.

For example, halfway through a roadway design project the profile may need adjustments to a vertical curve and the grades. By adjusting the profile, all of the related design elements update automatically, allowing the designer to instantly see the impact.

In this way, BIM facilitates evaluation of many more design alternatives. As part of the design process, civil engineers can leverage the information model to conduct simulation and analysis to optimise the design for constructability, sustainability and road safety. Finally, with a BIM process, design deliverables can be created directly from the information model. Deliverables include not only 2D construction documentation,

but also the model itself and all the rich information it contains, which can be leveraged for quantity take-off, construction sequencing, construction stake-out, as-built comparisons and even operations and maintenance.

In the case of construction stake-out, digital points are added in the office to the information model and can be sent directly to total station equipment on site. This equipment has the ability, once coordinated to stake-out numerous points robotically removing the need to generate stake-out points from 2D CAD or paper drawings. This process allows a more efficient and accurate way to link the office to the site and through verification of the as-constructed, links the site back to the office.

The use of modelling, 3-D visualisation and analysis is nothing new for road and highway design professionals, but with traditional drafting-centric approaches, design, analysis and documentation become disconnected processes, making evaluation

of what-if scenarios inefficient and cost prohibitive.

By dynamically connecting design, analysis, and documentation in a BIM workflow, most of the effort in a roadway design project is shifted back into the detailed design phase when the ability to impact project performance is high and the cost of making design changes is low. This allows engineers to spend more time evaluating what-if scenarios to optimise the design and less time generating construction documentation.

Machine guidance applications can benefit significantly from a BIM model, an object based model supports attribute meta-data associated to work packages for specific machine types. High accuracy paving machines require parametric models, while earthmoving machinery can work with surfaces, string-lines as well as parametric models.

Benefits in civil design

The most immediate benefits of BIM in the case of road and highway design are better designs and increased efficiency and productivity. Because design and construction documentation are dynamically linked, the time needed to evaluate more alternatives, execute design changes and produce construction documentation is reduced significantly. This is particularly important for transportation agencies because it can shorten the time to contract letting, resulting in projects being completed sooner and within more predictable timetables.

Beyond efficiency and productivity, BIM facilitates roadway optimisation by including visualisation, simulation and analysis as part of the design process. Many criteria can be assessed to achieve an optimal roadway design, for example in terms of constructability, road safety and sustainability.

Constructability

Civil engineers typically design for code compliance, not for constructability. But incorrect interpretations about design intent made in the field because of ambiguous documentation can lead to delayed schedules, change in orders and RFIs (requests for information) after construction begins.

Consider a typical new highway construction project with bridges and interchanges budgeted for £100m. Typically, about seven to eight per cent of the investment will go into design development. Reducing the design spend by 35 per cent with a more productive process saves £2.6m. But reducing the construction portion by 15 per cent by considering constructability during design saves nearly £14m. These savings don't take into account litigation that can result from mistakes in the field. Designing for constructability can help reduce these mistakes before they become a problem.

"By dynamically connecting design, analysis, and documentation in a BIM workflow, most of the effort in a roadway design project is shifted back into the detailed design phase when the ability to impact project performance is high and the cost of making design changes is low."

Rich BIM models allow the machine guidance to reach new levels of data capture and as-built object modelling. Machine control, with a CAD based model improves productivity on a job site, by eliminating the need for traditional stake-out methods. However, the BIM model offers the ability to work with specific objects, and update at an object level the specificity of as-built information. This includes capturing more than just points; it includes layers, material type, and underground utilities, contributing to a rich model to be used further in the process.

A single BIM model can be updated from a variety of machine control applications simultaneously, and shared across multiple systems, minimising duplication of work.

Road safety

Analysis to ensure safe stopping and passing sight distances is a key factor driving design decisions. Traditional sight distance analysis is based on mathematical equations applied to vertical curvature in the road profile. But this approach fails to take into account factors such as horizontal layout and visual obstructions. Integrating interactive visualisation and sight distance simulation into the design process allows the civil engineer to identify quickly whether the road geometry meets critical safety parameters related to sight distances, including grades, curvature, and visual obstructions such as barriers, berms and foliage.

Probably the most significant advantage of BIM compared with a drafting-centric process is the ability to extend the use of the information model beyond design, analysis and simulation into the field (construction) through solutions like Leica's BIM Field Trip. For example, transportation agencies increasingly are using the 3-D model for operating construction equipment with GPS (Global Positioning System) machine guidance. Benefits include increased productivity and accuracy, reduced survey costs, lower equipment operating costs and an extended work day. ■

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BIM is a very powerful way to design and build. The Leica Geosystems' BIM solution concept is the BIM Field Trip – a lifecycle process that brings reality into BIM and BIM into reality.

Perfectly tailored to fit any stage of BIM adoption in concrete layout, MEP layout, quality assurance, renovation/retrofit, and operations/maintenance as-builting applications, the BIM Field Trip by Leica Geosystems includes customized packages of hardware and software that make it easy to move from 2D to 3D workflows to achieve common BIM goals such as reduced rework, increased predictability and higher profitability.

The BIM Field Trip solutions are available in three basic levels to help companies bridge the gaps in their BIM processes. At each level of the BIM Field Trip, hardware and software selections are tailored to the needs of the contractor and are easily scalable from one level to the next to provide practical solutions to common BIM challenges.

To find the BIM Field Trip solutions that are right for you visit
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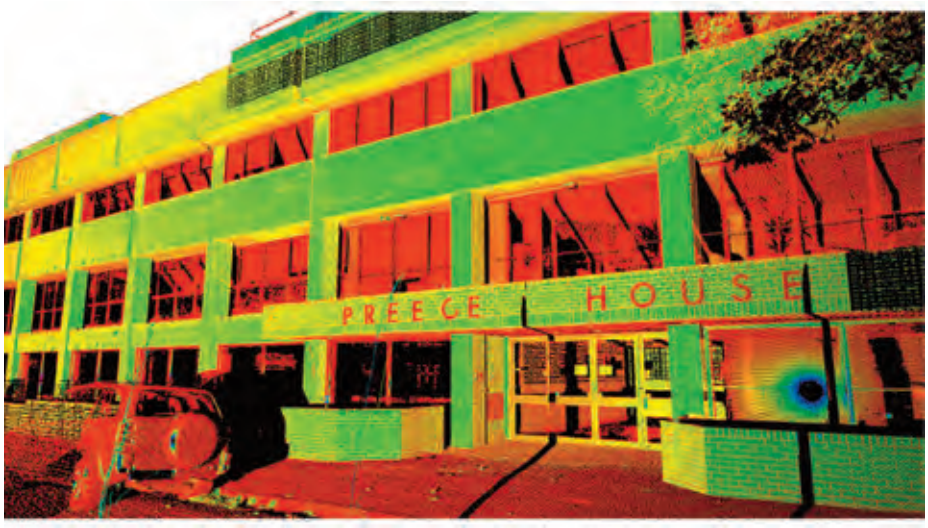
Leica Geosystems

10D – Surveying using laser scanning technology

10D began as a Building Surveying practice offering services including building design, cost control and project management. Through collaboration with UK laser scanning Engineering firm Adv Simtech, we explored the advantages of combining laser scanning, building surveying and computer modelling. Our first project was a complex site in central London and it was scanned and surveyed within an hour. Accurate 3D spatial data was recorded and there was no concern regarding the next consultant being able to open and use massive point clouds of data, we used it ourselves. The deliverable of accurate "As built" models and drawings was combined with analysis, such as rights to light, and visualisation with the use of virtual cameras throughout the scene. The accuracy and detail of the scan data and model exceeded the client's expectations. We know how quickly 3D data can be captured and our concept of keeping our services in-house has ensured these benefits are passed to the client. The concept of laser scanning, design, and modelling skills under one roof was proven.

What clients need

Clients require usable deliverables and that's what we provide. Whether it's an accurate survey and the preparation of drawings and a planning application, a computer model for rights to light analysis, an accurate digital terrain model to analyse environmental impact, or a BIM model to get you on the right path, we do it in-house. The benefits of laser scanning are never lost between consultants and speed and accuracy remain the key advantages of our method of working.



Scan to planning stage

By combining new technologies from the geo spatial sector with traditional Building Surveying skills we now bring a whole set of in-house skills to a client. We don't just scan to BIM, we scan and design. A one stop shop to bring your vision to planning stage and further. On larger projects where you have your own design team you no longer need to be concerned whether your Architect can receive and interpret your scan data, leave that to us.

Conclusion

At 10D, we combine traditional client facing Building Surveying skills with the speed and technologies of the Geo Sector. We believe we are unique in that we can single handily take your project from scanned data through to the planning stage. Why deal with lots of consultants when one will do?

10D, seeing things differently

10d Surveyors

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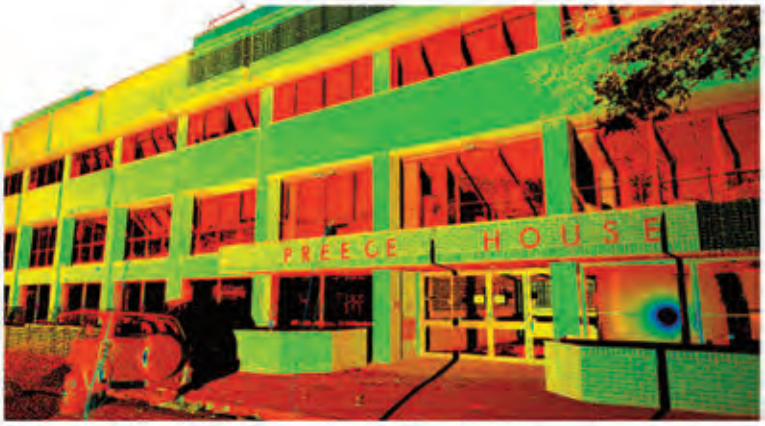


10d

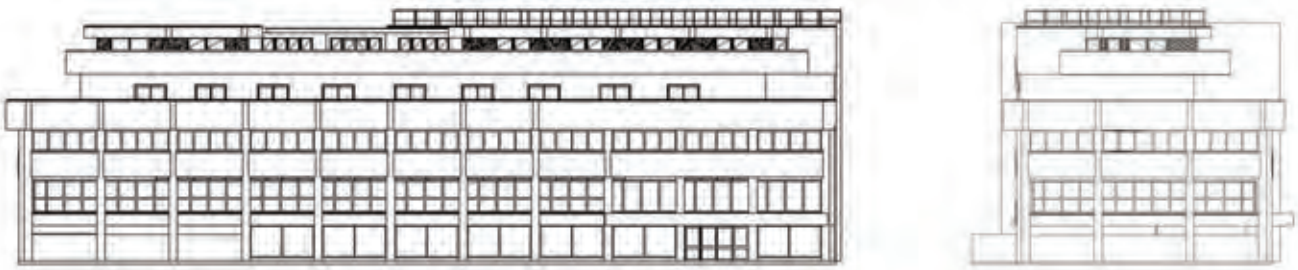
Surveyors

Laser Scanning

We've brought laser scanning, 3D modelling and Design together to get your BIM project off to a great start.

BIM "As built" model

Design and planning



Planning Applications

www.10d.ie +353(0)76 602 5071 info@10d.ie

Laser scanning / Land and Building Measured Surveys / 3D models
BIM friendly deliverables / Design (residential and commercial) / Planning

The practical challenges of BIM

Hinesh Mistry, Water Global Technology Leader – BIM, at CH2M HILL outlines the current challenges of BIM, but also the confidence within industry that challenges can be overcome...

In 2012 the UK Government mandated that construction firms must achieve Level 2 Building Information Modelling (BIM) on all central government projects by 2016. With less than one year to go until the deadline, UK construction companies are aligning their efforts to meet the government's compliance target, with a concern that firms who fail to meet this target may not be able to tender for work. During my time working in the sector I have seen first-hand some of the challenges that companies across the industry are experiencing in this. However, I have also witnessed the steps that many clients such as the Environment Agency have taken to tackle head-on some of these issues.

At a basic level BIM is a very broad term that describes the process of creating a digital model of a building or other structure, such as bridges, in a virtual manner and maximising the use of that information. BIM Level 2 specifically concerns information which is linked to a 3D virtual model that is used in the lifecycle of that asset. As such, there are a number of standards that have defined the requirements. In the work I have undertaken with government agencies to develop their BIM processes, this has posed several challenges.

The Common Data Environment (CDE) is the first of these, as it raises a number of practical issues. The standard (BS 1192:2007) calls for a single environment for all entities to work within for the lifecycle of that asset. There are two options; supplier provided CDE and Client provided CDE.

If a supplier provides this CDE, a client will require a log-in in order to access information — all of which is within the supplier's system. If there are multiple suppliers, then there will be numerous systems, requiring clients to have multiple accounts and passwords. Further problems of access may also arise should one supplier leave the project. Secondly, if a CDE is provided by the client, all information will be stored on a central location. However, this is generally inconvenient for suppliers whose systems may not be suitable for authoring models. This is because each supplier will have a multitude of complex BIM authoring tools which together provide the BIM. As a result of these issues, a typical project will have, as a minimum, two common data environments; namely the client CDE and the supplier CDE. [see Figure 1].

"The approach that companies should take with regards to the transfer of information is defined in BS 1192-4 standard which prescribes the use of Construction Operations Building Information Exchange (COBie), a spreadsheet data format, as the data exchange medium."

Another challenge arising is the enabling geometry to be viewed by any party. Currently, one of the few formats which is vendor neutral and can be viewed across different systems is Industry Foundation Classes (IFC). However, while this format retains the geometry of the model, it loses some of the intelligence which can result in a rather static model. Even the use of native formats, if not properly considered, can be costly.

The popular Revit design authoring package for example, which has been used in the building

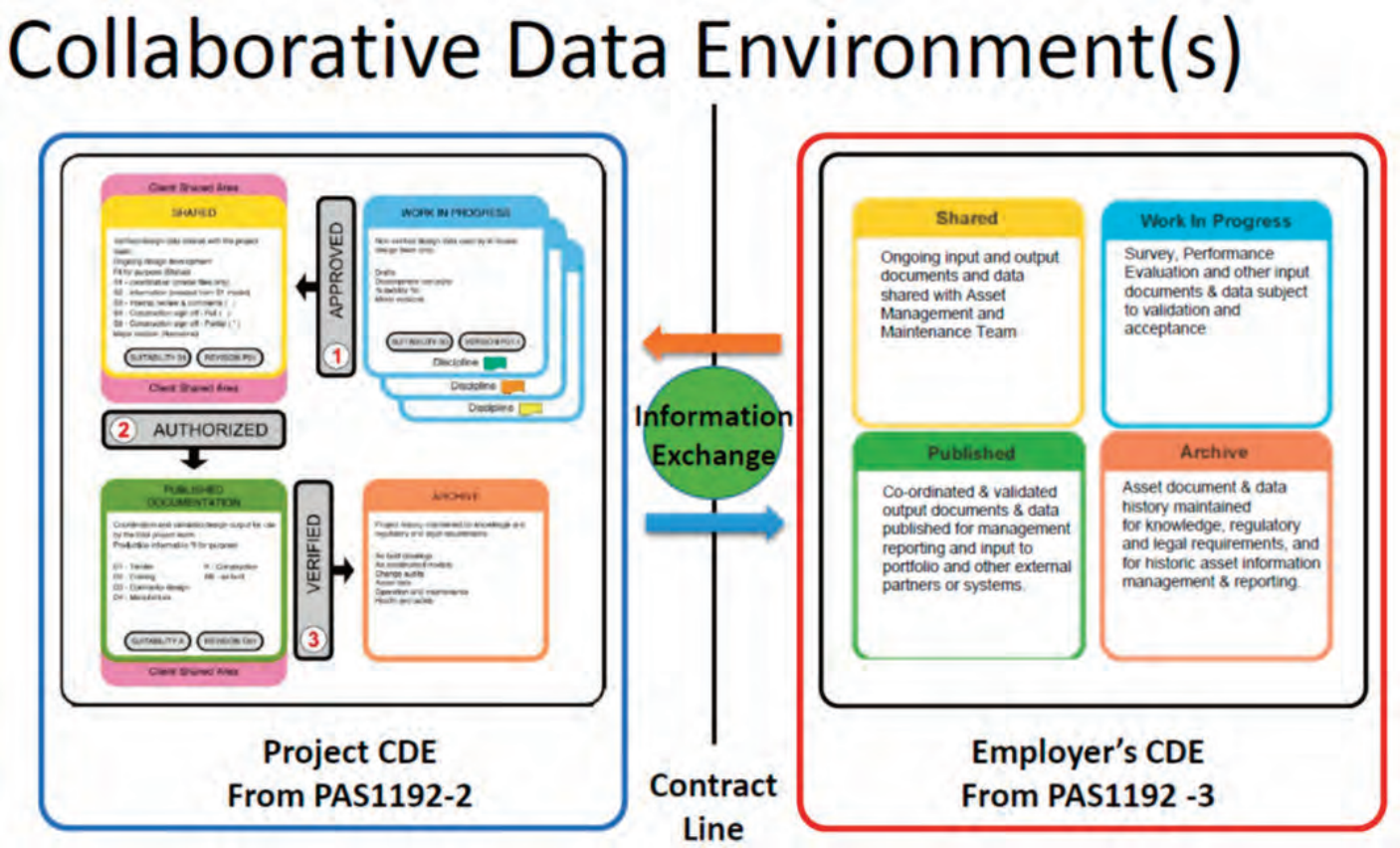


Figure 1

industry is not backward-compatible, which means that future Revit model users will need the latest version to open the latest files. However, with most UK government agencies recognising the need for vendor neutral model formats, there is confidence that software suppliers will have recognised this opportunity and provide the necessary output. And with IFC 4 under development, this vendor neutral format is here to stay.

"It may require a lot of effort in the short term, but once fully implemented, Level 2 BIM will be a positive development for the UK construction industry."

A further hurdle for construction companies attempting to reach government compliance targets is information or data transfer. The approach that companies should take with regards to the transfer of information is defined in BS 1192-4 standard which prescribes the use of Construction Operations Building Information Exchange (COBie), a spreadsheet data format, as the data exchange medium. This was selected as a means by which companies can package up data from various sources and deliver it in a standard format. It has been relatively successful in the building industry where the COBie template was developed, however, transferring this COBie template into the infrastructure arena can be somewhat more challenging as there are difficulties with mapping assets across.

There are two issues here. The first concerns mapping across the nomenclature to ensure that the language being used is applicable to the infrastructure, and the second is for design authoring applications to provide automated outputs directly in COBie format. This first challenge has been addressed by the Environment Agency, where the COBie data structure has been mapped to their data structure, which means that automated data exchange is a reality. As for the second challenge, continued and consistent dialogue,

standards and interactions from all levels should help to ensure that the required technology will become available soon.

The final challenge for BIM is, and in all likelihood will always be, the need for a human user to create, navigate, and assess a virtual 3D construction and to transfer information across systems. However, whilst having to learn new methods of working may pose difficulties, undertaking this learning gradually using bite size chunks of information will pay dividends. Companies can help improve their employees' understanding by facilitating their learning through the provision of materials and information sessions/briefings. In addition, once standards and workflows become automated, users will find they have more time to focus on the great projects they are working on.

Whilst achieving BIM Level 2 compliance in time for the government's 2016 deadline may seem a little daunting, and whilst there certainly are challenges arising, the majority of these issues can be tackled. The 2016 deadline is fast approaching but it will help to spur companies on to implement changes that they are more than capable of making with their skilled workforces. It may require a lot of effort in the short term, but once fully implemented, Level 2 BIM will be a positive development for the UK construction industry. It will enable more complex and imaginative designs, improve the design process, and benefit workers through increased risk mitigation and on-site health and safety. Challenges are there to be over-come, and I believe that these will soon be conquered as companies adapt, and technology develops to see BIM become the norm. ■

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BIM Objects

The fundamental building blocks of Building Information Modelling (BIM)

Kitchen appliances as Objects produced by BIMobject Mosquito software

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 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?

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 reference 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 manufacturers which already have digital representations of their products in a mechanical CAD system, now they can benefit from the conversion process to BIM developed by BIMobject. This process is quicker to deliver, less costly and provides consistent quality – all of which are significant improvements on the current hand crafted methods. What could be more effective than taking what exists already and re-using it in a different way?

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 over 300 manufacturers as customers, over 90,000 registered users, and with over 1.6m downloads from its portal. BIMobject is headquartered in Sweden with subsidiaries in USA, 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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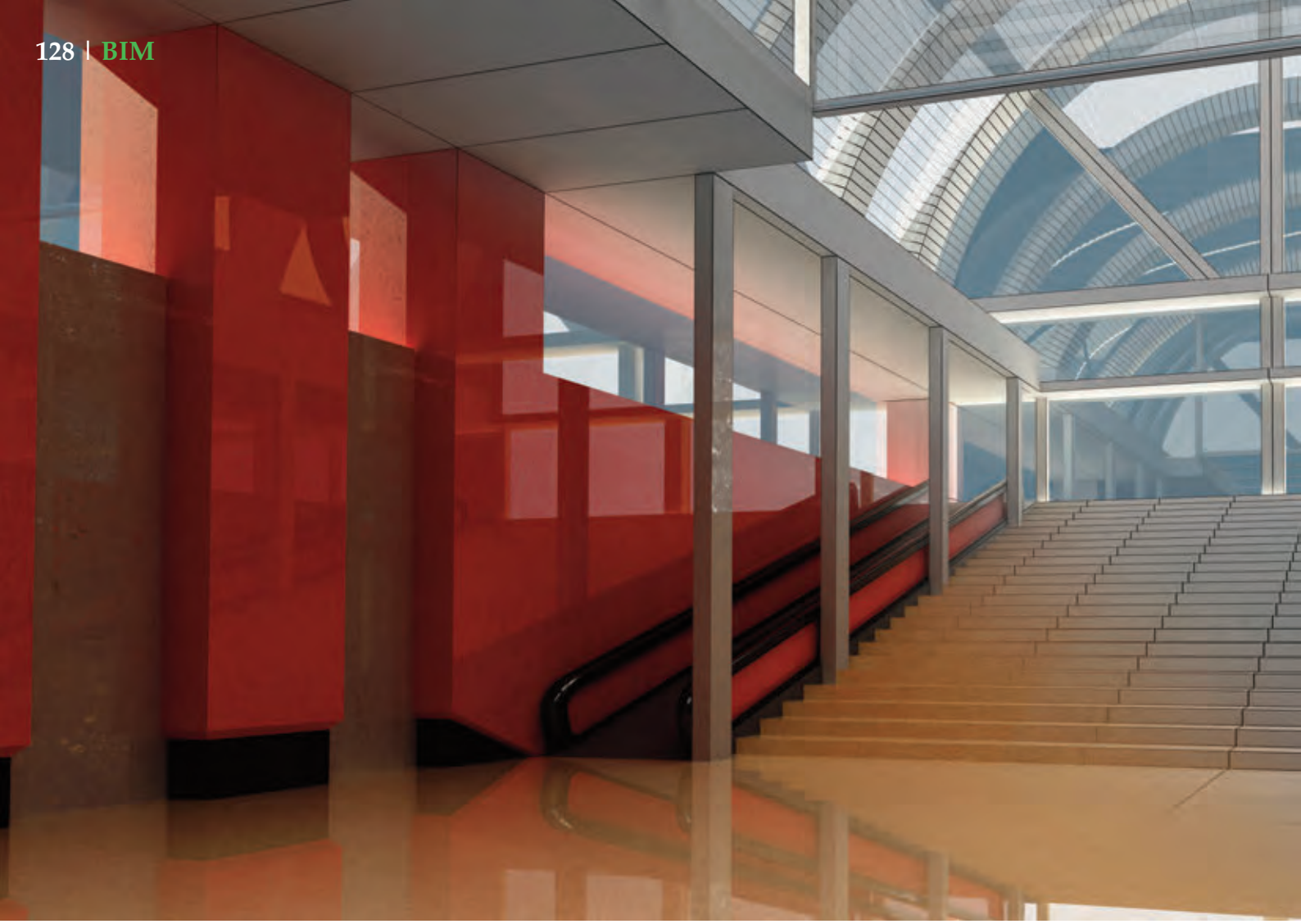


BIM: Library objects for AEC industries

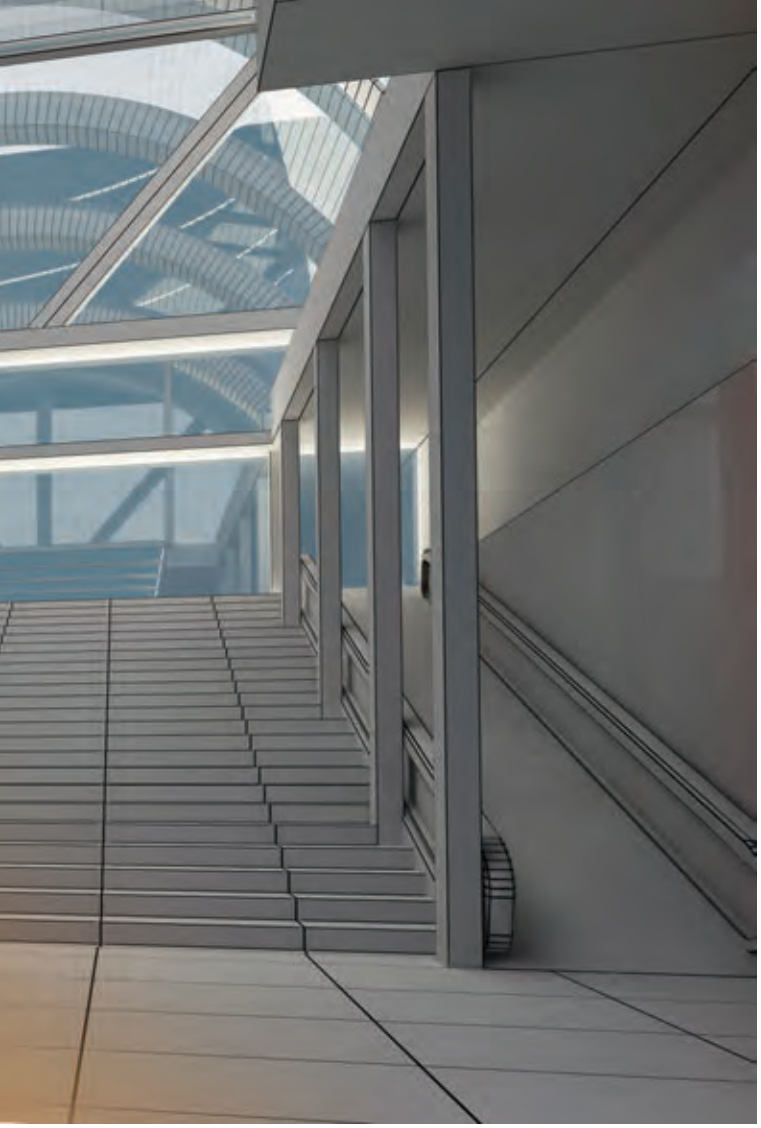
Stephanie Kosandiak Lead Programme Manager for Construction at BSI and Nick Nisbet Lead Technical Author discuss how the BS 8541-5 Library objects for architecture series will impact BIM...

As BIM Level 2 becomes more widely adopted in the UK, BSI is delighted to be adding two new British Standards to the BS 8541 Library Object series providing a consistent set of 3D libraries and definitions for construction product manufacturers and suppliers.

The BS 8541 series has become the key point of reference for specifying and assessing the quality of manufacturers', generic and template objects for use with BIM, and is heavily referenced in the NBS Object Library recommendations.

BS 8541-5:2015 Library objects for architecture, engineering and construction: Assemblies

Assemblies are an increasingly important aspect of construction, as built-environment design, (pre-) fabrication, construction and operation are streamlined. BS 8541-5 addresses the problem of supplying some information on the overall assembly, and some on the constituent parts. The transmission of information about assemblies is especially challenging when both the overall assembly and the constituent parts have significance in the management of the design, construction and use. In particular, attention might



switch between the overall assembly and the constituent parts, which might affect processes such as material take-off.

This has implications for specification, comparison and selection of products and solutions, for coordination, for take-off and for asset management.

Examples include during design, pre-designed aspects, complex system solutions, and repetitive space types. During construction, assemblies represent pre-fabricated and off-site manufactured items and recommended details. For handover and operations, assemblies may represent engineered-to-order solutions, standard furniture schedules and standard asset groupings.

BS 8541-5:2015 Library objects for architecture, engineering and construction: Product and facility declarations

Most construction products are now supported by a plethora of declarations of properties supported by third party schemes. This part ensures that the attributes relating to any such scheme, such as Environmental Product Declarations (EPD), WRAP and DEC, can be transmitted clearly with details of their source, degree of authority and applicability. Whilst the inclusion of such information in a construction library object for BIM is optional, this Code of Practice will help ensure that the appropriate degree of comparability and verification can be used. Construction products regulations and CEN standards for buildings and products provide the primary examples. This part of BS 8541 supports the communication of the voluntary environmental product declarations (EPDs) required by BS EN 15804 and BS EN 15978, as well as the CE marking details, in a format which can be incorporated in BIM processes. It also covers the communication of other product declarations such as wastage rates developed with the UK Government WRAP programme and UK Government Display Energy Certificate (DEC) declaration scheme.

Summary

Repeatable rooms and prefabricated modules on the one hand, and the Construction Products Regulation and energy performance reporting on the other, are issues of growing importance in the construction sector. These codes of practice build on the earlier parts of the series to help the industry achieve higher quality and accuracy when exchanging product (and facility) information. ■

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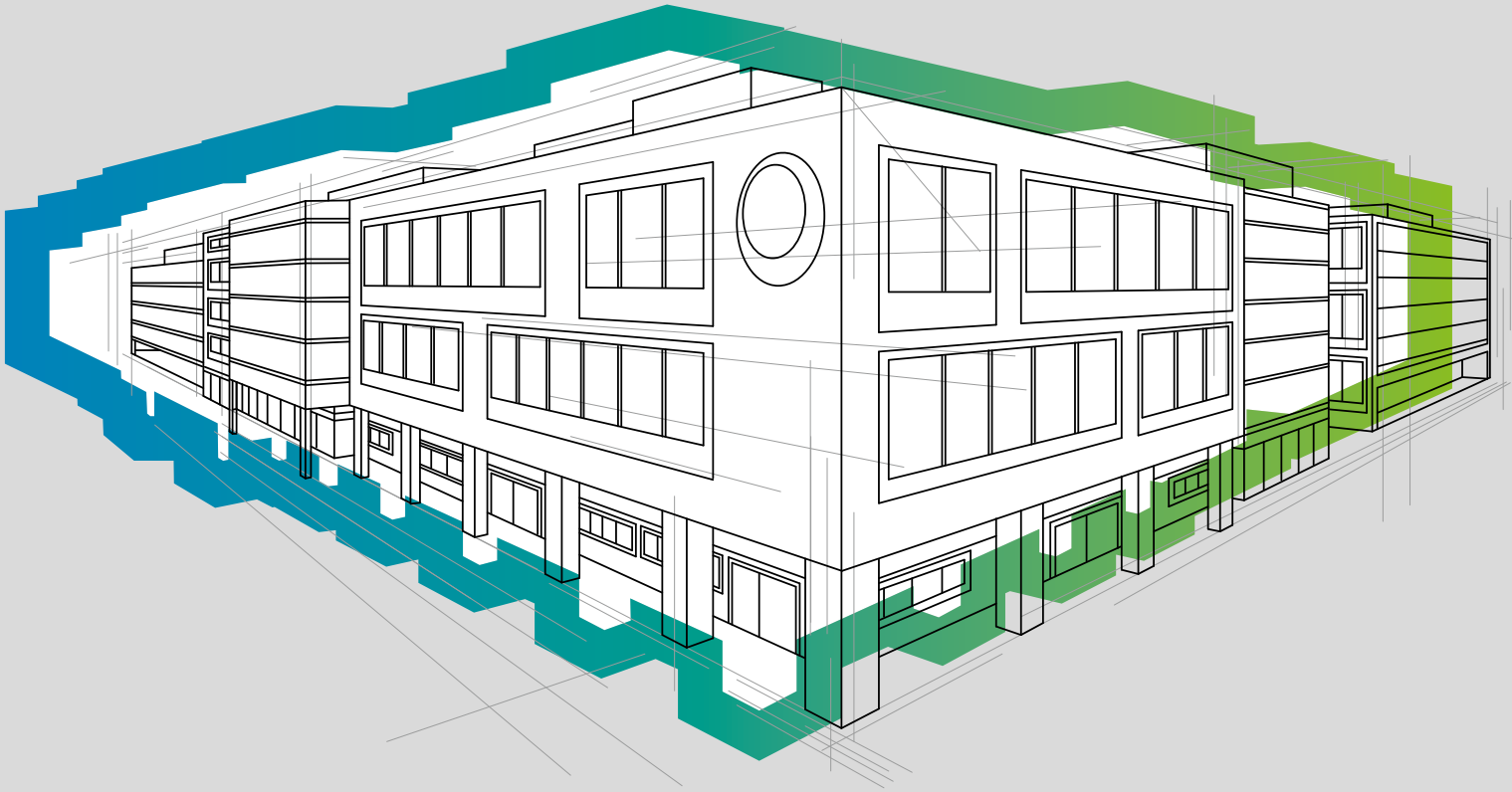

A coordinated approach to BIM.

Previously architects did not always have the most efficient way of sharing information, so their design intent could be lost. Andy Murphy, Non-Residential Sector Director at Saint-Gobain, explores how Building Information Modelling (BIM) has the potential to revolutionise the efficiency of projects in the built environment.

With the construction industry fast recovering with spirit from the recession, there has never been a better time to embrace new technology and approach our craft with fresh perspective.

BIM is a fundamental part of the Government's 'Construction 2025' vision and, as we get closer to the 2016 deadline it has started to gain momentum . At this point, all centrally funded Government projects will need to be constructed using BIM at level 2, with the aim of improving construction efficiency. Finding the errors in the computer-generated model before the actual build begins will help to reduce errors and strengthen proposals. This should ultimately add immense value, reducing time on site and improving efficiencies during the construction stage.

Before BIM, Computer-Aided Design (CAD) drawings were relied on for helping to complete a construction project and differing as-built drawings from the contractor to get an insight into architects' choices. This was not always enough information to aide a project efficiently and cost effectively over the its lifetime.

With the potential to serve as an electronic manual to assist those maintaining the built environment, it can allow users to share a common set of information on construction projects that can be transmitted easily between all interested parties.

Quality Control

BIM has been around for several years and has been used across many sectors to ensure that many types of construction are digitised at the design stage. In the automotive and defence industries, BIM has been a key driver of innovation, enabling supply chain efficiencies, encouraging collaboration and allowing best practice to be shared in depth and breadth throughout the community of partners involved in the activity. The pace at which BIM is now being used in the construction sector is accelerating, with recent research indicating that 94% of main contractors expect to be using BIM technology by 2017.

BIM technologies enable improved quality of project design while driving down the cost of construction by streamlining and modernising the processes by which we design, construct and manage Government-built assets.

Coordination is key

Three years ago, Saint-Gobain adopted a coordinated approach to its BIM data production with the objective to position itself as the leading touch point for architects, designers and contractors who require high-quality information on the sustainable materials, products and solutions that are available from Saint-Gobain.

The project to coordinate Saint-Gobain's BIM data ensures that it's as accurate and detailed as it can be. This means that projects designed using its solutions can be the most integrated available on the market, with the best opportunity to offer economies in design, construction and post-delivery management.

Saint-Gobain's newly launched Multi-Comfort approach to building design, which focuses on the wellbeing of building occupants by ensuring that thermal, acoustic, indoor air quality and optimised glazing solutions are all properly considered from the beginning of the design process, is enabled by Saint-Gobain's BIM approach.

Continually updating the training that is provided to Saint-Gobain BIM technologists to the highest, most current standard is a key enabler of this approach. This ensures that all Saint-Gobain companies have individuals capable of producing and managing BIM data that is of a market-leading standard. This is a unique approach from the world's leading sustainable habitat business.

The right software

Autodesk is the leading brand for BIM design software, data production and management. Their suite of products provides a portfolio of interoperable 3D visualisation tools that support BIM-based workflows. These two global thought leaders have entered into an agreement in order to ensure that Saint-Gobain continues to be positioned as the reference in the production of BIM data for the construction industry.

The agreement enables Saint-Gobain to share software licences across its 34 brands in the UK on a totally flexible basis. This keeps BIM data provided to the market completely up to date, accurate and available free of charge to construction industry partners, designers and clients.

As its BIM activity continues to expand, new users can be added to the Saint-Gobain BIM community without the need to purchase additional licences. This is because individual software licences can be used by multiple individuals over time, rather than under the previous widely adopted model whereby a licence, once assigned, could not be easily re-deployed.

Optimum Results

Saint-Gobain is globally positioned at the forefront of innovative thinking on issues of comfort and sustainability for the owners, designers, constructors and occupants of the built environment. The agreement that Saint-Gobain in the UK and Ireland has entered into with Autodesk is a major step towards ensuring that it is positioned to deliver the optimum level of BIM data to the construction sector. Continuing to support and assist customers to produce buildings that are truly comfortable, affordable and sustainable. BIM is critical to those objectives, as reflected in Saint-Gobain's action to guarantee its leadership.

BIM is not a complete solution; it's a process to be added to the skill set to promote best practice. If all members of the built environment supply chain start to use BIM to its full potential, the industry can begin to work together more effectively. With the announcement that all new central government-funded buildings must be constructed using BIM software in tandem with Government Soft Landings (GSL) by 2016, this awareness and collaboration will only support the promise made when delivering building design.

A longer-term approach to buildings is needed to improve industry efficiencies and quality. If we give greater weight to the user's requirements at the design stage, the focus is on meeting their needs at the design stage, streamlining the process in the long term.

Click here to download your free copy of Saint-Gobain's BIM Basics guide

SAINT-GOBAIN 350

There is a better way to work

With SMART visual collaboration solutions, people collaborate in visual and interactive ways, whether they're in the same room or in workspaces around the world. Because our solutions are designed to streamline the exchange of information and boost productivity, they can benefit virtually any organisation. They have been implemented by businesses in various industries, from architecture to manufacturing to telecommunications. SMART have helped customers find innovative ways to make more informed decisions, reduce costs, engage clients and stakeholders and train personnel – all by making it easier to share information and communicate ideas.

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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.

To find out more on how SMART are revolutionising the world of AEC please contact us.

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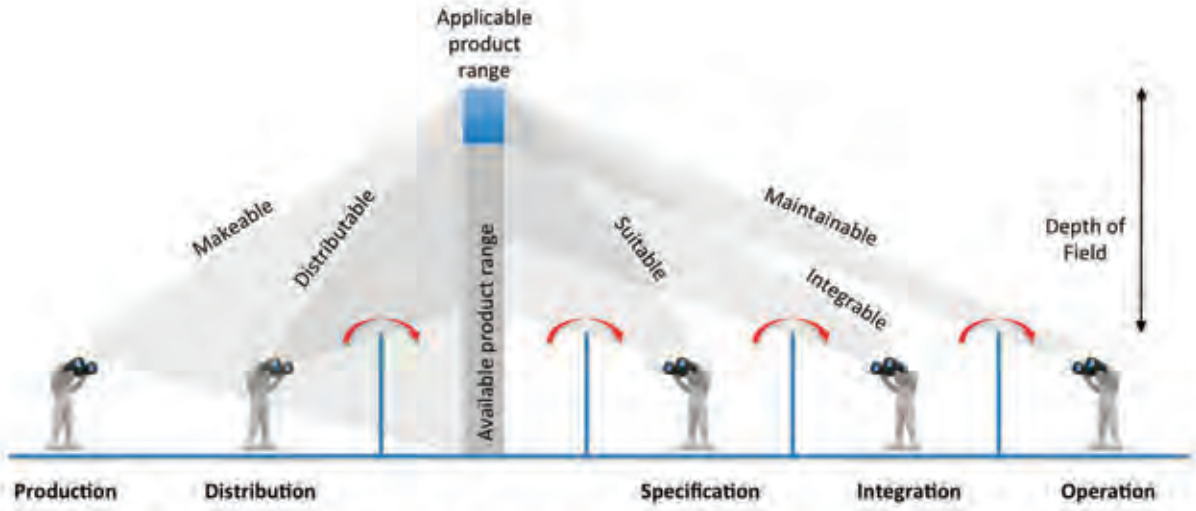
The BIM menu of information

Steve Thompson, Chair of BIM4M2 and Market Manager for Construction and Infrastructure at Tata Steel discusses the game-changing potential in efficiency improvements that BIM offers, but says it will only be deliverable consistently with clear definitions of what information is required and a menu of information for a project team to select from...

The recent BIM4M2 survey of manufacturers highlighted a number of things, one of which was that manufacturers are often asked for BIM objects or 'all of your BIM', without it being clear what information is really being asked for. To use the well-known quote from Theodore Levitt, "People don't want to buy a quarter-inch drill. They want a quarter-inch hole!" When someone asks for a BIM object or 'all of your BIM', what they really need is information in a digital, exchangeable format that supports their project activities. There are significant efficiencies that can be gained within the supply chain if we all work together to ask and answer the right questions.

Beyond the commonly accepted information requirements to enable exchange such as IFC and COBie, the information necessary to meet these requirements can vary significantly, and can have a huge impact on the results. If too much information is included for the sake of covering the bases, this can provide unnecessary constraints on the supply chain, but also miss the opportunity to get the most suitable products and solutions into the project efficiently.

Looking at the first sketch to illustrate the point, a manufacturer may have a range of available products to suit a generic application. The specifiers may look



1: Over-constrained depth of field – information thrown over the wall

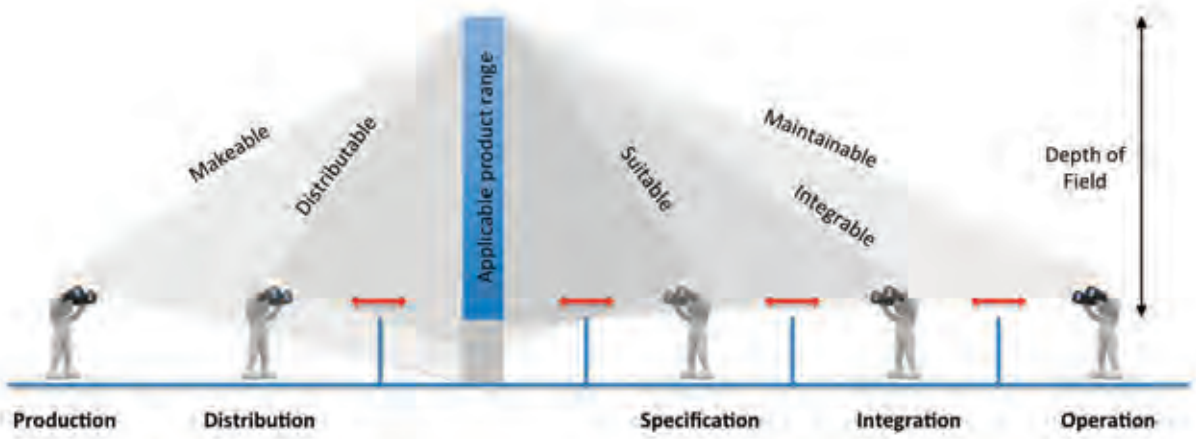
at the range of products and identify those that are suitable for the project they are working on, and specify a range to work from. The contractor may then look at what he can deliver at an acceptable cost and timescale that falls within the range identified by the specifiers. The asset owner and FM organisation are likely to have a set of criteria for ongoing maintenance and renewing of the products, but that view may only include a small range of products already selected. In other words, the proportion of products within a range that meet all those requirements is unlikely to be a large proportion of the full product range as a result of over-constraint. This can be the story if information is thrown over the wall between players, or BIM objects passed between stakeholders without a clear definition of what information is required.

"If too much information is included for the sake of covering the bases, this can provide unnecessary constraints on the supply chain, but also miss the opportunity to get the most suitable products and solutions into the project efficiently."

It's important to understand the impact of exchange of information on the supply of construction products, not just on their specification and installation.

How does a product get from its specification and production through to its integration within a built asset? What complicates the issue further is that the distributor of the products may look at that original range of products and decide that he can only deliver a proportion of those products to a project based on his view of timescales, costs, etc.

So how do we increase the likelihood of delivering the right products and information to suit everyone's needs? We need to increase the depth of field (distance between the nearest and farthest objects in a scene that appears clear) and field of view (the extent of the observable world seen from a given viewpoint). We need to define information requirements based on purpose, not just by product type and generic application, and ensure these requirements are clearly shared through two-way communication between players if we are to benefit from some of the available efficiencies in the supply chain. These include reducing delivery times by providing information on clear decisions that impact on the supply of products, followed by early supplier awareness of product decisions. If people want a quarter-inch hole, let's understand that's what they want and make sure that's what we help deliver; not just focus on delivering a drill without understanding which drill bit we need for the job in hand.



2: Clearly defined information requirements – communication across the wall

I'm hopeful that the BIM Toolkit will help us achieve this, supported by the further development and application of PDTs (Product Data Templates), enabling each of the players within an asset's and product's lifecycle to increase the depth of field and define information requirements. It's important that we don't overload models with unnecessary information and constraints, but that instead we make information available for project teams to use where appropriate. For this we can learn from the concept of Product Lifecycle Management (PLM) used in the manufacturing and other sectors, and looking forward to Level 3 and Digital Built Britain, real-time analytics will make the potential opportunities for improved efficiencies much more transparent. For example, supply chain partners may be assessed based on their performance, measured throughout a number of projects instead of data being exchanged and validated only at key project stages.

"It's important that we don't overload models with unnecessary information and constraints, but that instead we make information available for project teams to use where appropriate."

So to summarise, BIM is a process which offers game-changing potential in efficiency improvements, but these will only be deliverable consistently with clear definitions of what information is required at a project and discipline level (including product supply), and by enabling project teams to select relevant information to answer those requirements, nothing more and nothing less; that is the concept behind PDTs, a menu of information for a project team to select from. ■

BIM4M2

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Wienerberger BIM objects now downloadable directly from its website!

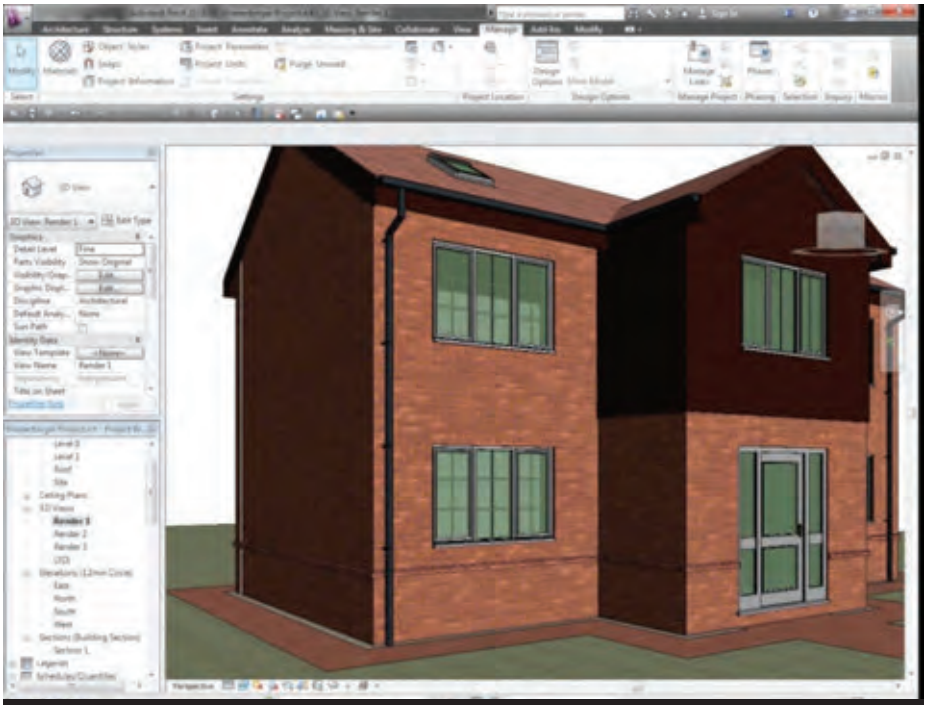
1 April 15: Wienerberger, the leading provider of wall, roof and landscaping innovations, launched its fully functional Building Information Modelling (BIM) portal on its website called BIM Lab in April 2014. BIM objects from Wienerberger can now be downloaded directly from the Wienerberger website www.wienerberger.co.uk/welcome-to-bim-lab or via BIMStore.

The portal marks the first time that Wienerberger has opened up its product and construction system portfolio for use with BIM technology – allowing architects and specifiers the opportunity to get a clear understanding of exactly how certain products will practically function in their projects, and has proven very popular. Wienerberger has made full BIM specifications available on products right across its three divisions of roof, wall and landscaping.

Annette Forster, Marketing Director of Wienerberger UK commented: "We have a catalogue of wall types based upon our brick products as well as individual components being modelled. These are much more useful for architects. We also have the performance data, weights, densities and other useful information included in our offering. We are the first manufacturer to offer this information across the entire building envelope of roof, wall and landscaping."

Harald Schwarzmayr, Managing Director of Wienerberger UK, commented:

"We pride ourselves on innovating on behalf of our customers, and it's clear to us that BIM provides an incredible level of information and insight for architects and specifiers at the crucial initial design stages of projects. As such, we feel it is really important for Wienerberger to have an easy-to-access BIM platform to showcase exactly how well our products perform, and indeed how versatile they are."



An example of a Wienerberger model

He continued:

"We understand that evolving technology has a huge potential to transform the construction industry, and we are committed to ensuring that we translate the latest thought leadership and research into practical innovations for our customers to use. Our BIM Lab is a great example of that, and just one of many more that we hope to launch over the next few years."

To visit the Wienerberger BIM Lab, please find visit www.bimlab.biz . To find out more about Wienerberger UK please visit: www.wienerberger.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 key discussion point at the recent BIM round table hosted by British Gypsum was the difficulties that facilities managers currently faced in obtaining building information data from projects at handover. This collaborative forum consisted of various industry representatives including an architect, an off-site manufacturer, a facilities management company and a technology solutions provider. Discussions highlighted the importance of accurate data being available to the end users of a building to enable the most efficient running of the property.

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 www.british-gypsum.com/wbssapr or call our Technical Advice Centre on 0844 800 1991.

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BIM READY

British Gypsum
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BIM: A view from the coalface

Terry Gough, BIM champion at Kent County Council outlines the challenges faced as a Client attempting to implement BIM technology, along with the challenges faced by working practices both in-house and with the supply chain...

This article is intended to help anyone embarking on a BIM journey by describing what challenges I faced from the very beginning, and how, as a Client, we have found solutions. The BIM experience can be difficult, but with the buy-in and support from partners, the process can be enjoyable. As someone who has 'been there, done that, and got the t-shirt', I hope my first-hand account will at least be informative.

"I recognised early on that educating BIM was a key aspect, and have helped and worked with a number of small businesses within their own offices to up-skill staff and give them a better understanding of what BIM can offer in relation to being better informed through better design, clear information, and working collaboratively."

In my first foray into the BIM world, it was critical that I understood what BIM was, what it meant for the business, but also how that would impact on our wider supply chain. Therefore, my first step was to absorb the PAS and BS documents that had been produced on behalf of the Government. This lasted a number of weeks before I knew what I was talking about and could communicate effectively with all partners. This then lead me on a journey of discovery, not only with the documentation, but also with the current thinking in technology. My first thoughts were one of horror, but then I realised that this was not a lonely journey, but one that I would be on with a number of other BIM enthusiasts. This thing called BIM needed to be tamed, and that was what I set out to do.

I began by looking at what BIM implementation meant to staff and colleagues and how this would

Terry Gough (MCIOB, MAPM) Senior Project Manager/BIM Champion

fit with our existing processes and procedures. This was never going to be easy, but I relished the challenge. I started by developing a number of presentations that covered the very basics of BIM, but in relation to data and information capture as this is, and remains, the most important aspect of BIM. I arranged for a number of external companies to attend our office here in Maidstone to give first-hand experience of working with BIM and what it meant to them. This gave the staff a good grounding in what BIM was, and meant how it could be used in all of our projects on a day to day basis. The next stage was to progress with the processes and procedures, and I quickly undertook an exercise of re-writing a number of Proforma's to meet our requirements with BIM in the shape of EiR's, BIM Protocol and a BIM kick-off meeting agenda. This agenda marked the starting point. I also created a workflow process chart which broke down the tasks in relation to Project Management, Design Management, Cost Management, BIM, GSL and HSE in-line with the RIBA stages 0-7, which also worked well with the BIM information delivery cycle.

All of the above happened at the same time that I began to work with the SME's here in Kent in relation to BIM. This was the most satisfying aspect, as I could impart my newly gained knowledge. I worked alongside both the National Federation of Builders (NFB) and Project Five on a 5 month learning curve which took the SME's through the basics of BIM, giving them all a great grounding and understanding of how to implement BIM within the business. This small group has now led to the Kent BIM Hub being formed which is going from strength to strength.

The Kent BIM Hub group initially started out as a few members who had carried out the NFB training, and we thought it may be a better long-term effort if we stayed as a group which I was happy to administer. However, the group then expanded through a talk I gave at a Construction Excellence (CE) breakfast meeting where there was more interest than we realised. I am now looking at the Hub to see how this will be sustainable for the future, and have set up a Steering Group to examine whether we could be a not-for-profit organisation aiming to help all members on their BIM journey through education and process change.

I recognised early on that educating BIM was a key aspect, and have helped and worked with a number of small businesses within their own offices to up-skill staff and give them a better understanding of what BIM can offer in relation to being better informed through better design, clear information, and working collaboratively. It was my intention that if Kent County Council was going to procure any contractors or consultants, they all needed to be able to deliver to Level 2 and work within a collaborative environment.

As someone that has experienced the implementation of BIM processes, I do feel that one area of concern worth mentioning is that of software vendors. I would advise that it pays to be mindful of what information is available, or what claims are made regarding what the software is capable of, as this is sometimes an exaggeration, and they can't always do everything. Please do look at all options when assessing potential software solutions and ensure that it meets the needs of your business.

I have personally looked at a number of solutions for a Common Data Environment and have found this to be quite a lengthy exercise as lots of vendors offer a solution, but in reality, only offer a small percentage or a repository for information and not the actual collaborative tool, or indeed the tool to ensure that data and information can be captured and utilised to the benefit of the client or indeed their FM provider. I am now in the process of looking at potential solutions that would provide a Design, Build, Operate and Maintain solution, but this I feel is a step to far at this point in the development of software solutions, and don't feel that a one-stop-shop is currently available to Kent County Council. ■

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BIM3 Initiatives Launched by Government – but what about BIM2?

The government has launched its building information modelling (BIM) level 3 initiatives with a view to implement in 2025 and aim of improving data security and accessibility, scrapping paper contracts and driving infrastructure-spending efficiencies.

Here, David Wigglesworth, Managing Director of UK Specification, a division of ASSA ABLOY UK, looks at the new level in terms of its objectives and likely levels of adoption, and how the global leader in door opening solutions is already on its way to achieving its aims.

Government BIM task force chief – and BIM working group chair – Mark Bew said "BIM3" would bring every aspect of an infrastructure project into one central plan that each construction team member had access.

Its predecessor, BIM2 must be used on a mandatory basis on all government projects from 2016. That means client, contractor and designer will be working from data-rich models – but in the current state, not necessarily the same one.

What makes BIM3 different, and the 10 year journey the Government is taking, is it believes it will improve the design process further and make it even more efficient, so that the whole specification process, right from manufacturers will be able to feed straight into models and all parts of the supply chain will have better access to resources such as manufacturing data.

According to Bew, BIM3 will allow a significant shift from traditional agreement forms to "much more transparent and paperless contracts."

Mobile is Key

BIM as a concept has undoubtedly been bubbling under the surface for many years and the Government acknowledges the challenges ahead to achieve BIM3, as an intense step up from BIM level 2 in terms of further moving away from the traditional contract forms.

In addition, any future proof BIM activity must be accessible from any device, as more business is conducted by tablet and mobile technology.

"You get people using quite complicated software in big machines which limits [accessibility] to a community of designers and engineers," Bew said. "It needs to be accessed by anyone onsite or in the building via iPhone or iPad."

Bringing all the information together into one project file also improves data security. In effect in accordance with BIM3, data will be secure by design, and not an afterthought and additional resource.

BIM3 will also improve the understanding of existing assets, which will "aid planning and forecasting around need", said Bew.

Building Physics, People and Traffic Flows

Bew added that this would allow for improvements in the design and planning process through the better modelling of building physics, people and traffic flows.

To translate this to ASSA ABLOY's world, this is something UK Specification has adopted right from the start of its BIM journey, based on the amount of doorsets that can be used in a building and the impact on its daily use.

Taking specification from this perspective, for example, can influence the door width of a building's overall dimensions, flow of people through a building and ultimate safety and security of those people.

Smart Future

Looking to the future with the emergence of smart homes and intelligent buildings, Bew believes the data gathered from BIM3 will feed into the smart cities and services, already being developed in concept with Bristol being primed as the first smart city in the UK.

"The aim is for construction to become much more focused on customer and community need rather than asset oriented," he says.

"So the asset is created for the provision of a service not the other way around. Once this matures it will enable us to control social wellbeing and the cost base of the nation."

BIM Adoption

Whilst all this sounds enlightening and the potential of BIM3 is clear and highlighted by Government to have a positive impact on the specification process as a whole, challenges over adoption remains of critical concern.

For the most part, UK Specification still believes there is a significant requirement to demystify the objectives of BIM right from the

basics of what it's about and how it can really help the specification process. After all, it's not described as the biggest cultural change in a generation by the RICS for no reason!

"The aim is for construction to become much more focused on customer and community need rather than asset oriented."

BIM really represents not just a process or technological trend but also a culture change, caused by external forces i.e. Government and other groups.

UK Specification currently offers to partner with specifiers architects, design led main contractors and property development companies, who we know are under increasing pressure to use BIM building practices (and will have no choice post 2016 for public sector programmes) to seamlessly adopt the principles of BIM in all aspects of building design.

But we also go one step further, and offer over 60 of our own exclusive BIM doorset objects, carefully designed following significant research to deliver on specific applications.

With this proposition, we believe UK Specification as a business division from ASSA ABLOY UK, can not only become a total provider of the highest quality architectural ironmongery and innovative doorsets, but also we can provide added value and knowledge of BIM practice, to level 2 and 3 to which we are already striving, together with the flexibility to engage with architects, design led contractors, property development companies and end users.

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 ASSA ABLOY UK.

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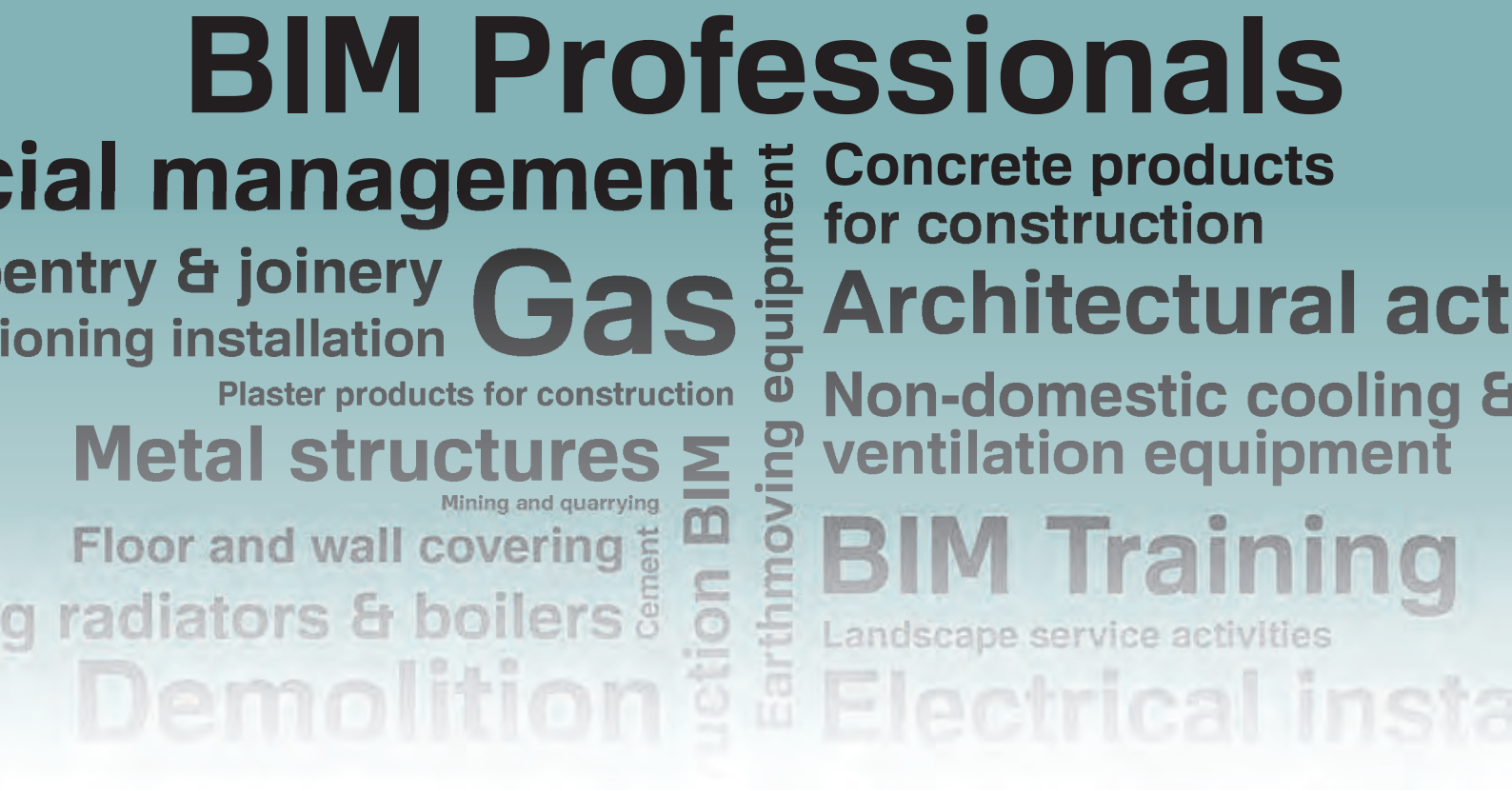


YOUR ONE-STOP-SHOP PLANNING DIRECTORY

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

BIM for coastal defences: Identifying data

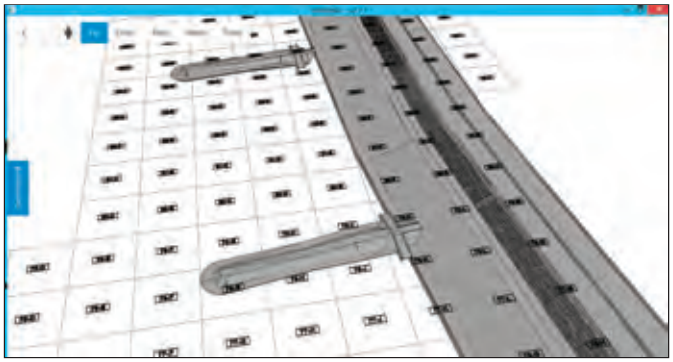
In the second of a series of interviews with Carl Green, Head of Engineering Services for Wyre Council, we follow the progress throughout the construction and operation of the Fylde Peninsula Coastal Programme...

The 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 environment. The new defences will protect 12,000 properties in total – 7500 in Rossall and 4500 in Anchorsholme, plus critical drainage and transport infrastructure.

Carl explains to PBC Today how the project is progressing compared to the team's expectations...

"We were surprised at the lack of interoperability between CAD packages as well as the limitations of exporting models and data to IFC and other formats. Initially, this caused us a great deal of concern as we were worried that critical data could be lost or be too difficult to find on a scheme of this scale.

"To help define and then address this challenge, Rob Umphray from Sitedesk suggested a situational questioning workshop. The aim of this exercise was to identify all of the situations that could arise during the lifetime of the asset in order to define the data sets and data sources that would be required to effectively manage each of these situations should they occur. This exercise provided us with an information template that we could work to, as well as a legend to work from when we need to recover the information. We were surprised by the number of permutations that resulted, ranging from the relatively benign to complete disaster scenarios.



"One of the early outcomes of the exercise was that there are lots of data sets and information buried at different levels in both the models and drawings. This disparity, allied to the challenges of interoperability may have made it challenging for the team to get the information that they needed.

"We solved this issue by overlaying a 3D grid over the entire area of each of the original models (see image above). The grid allows us to separate what are very large schemes into smaller segments which were aligned to the topography of the scheme. This way the relevant data sets are constrained to a smaller area. The data is presented in line with our scenario templates so should someone be maintaining the lifebelts, it is simple for them to find anything they need. On the other end of the scale, should there be a massive storm that damages the defences, we have all of the information that we need to reconstruct or repair as necessary, related directly to the area of the damage. The grid also helped mitigate some of the risks identified by interoperability concerns. Critical data sets could be re-entered if required to ensure that all of the right data was in the right place before we needed it.

Rock armour continues to be delivered to site where it is lifted from the wagons with an excavator, weighed and placed on the beach in the defined storage area

"One of the biggest successes arising from the exercise was that it provided us with a template that made it simpler for the Balfour Beatty staff and council officers to capture and relate the required groups of information to each area of the scheme. It also allowed the data to be captured and logged once, avoiding a duplication of effort. The grid system has also made it simpler to validate the information, as this too is completed on a grid by grid basis.

"The exercise also made us think about and define our workflows, particularly in relation to planned maintenance schedules and how we cope with expected reactive maintenance. We are already creating bespoke digital forms for each of these workflows so in the event of any planned or expected reactive maintenance, we can automatically assign the work to a council officer or subcontractor with the correct information and drawings.

"The Sitedesk software www.sitedeskconstruct.com contains a form creator as well as a time and user-based task assignment system. This provides us with the ability to integrate all of the benefits of the 3D design and virtual construction process into our asset management and FM processes, without the cost of an FM system or the data integration costs. We see this as a massive plus which keeps the model and the data alive.

"This exercise provided us with an information template that we could work to, as well as a legend to work from when we need to recover the information. We were surprised by the number of permutations that resulted, ranging from the relatively benign to complete disaster scenarios."

"We will shortly be completing the Anchorsholme scheme and the Rossall scheme is progressing at pace. The grid scheme has also helped minimise

Environment Secretary Owen Patterson MP attended an event to mark the start of the work on the flood defence scheme, along with Councillor Derek Antrobus, Chair of the Regional Flood and Coastal Committee

errors by breaking a large scheme into understandable pieces which has helped make the evolution into BIM workflows far less challenging.

"Moving forward, we are considering expanding the ways to use the model and the system. We are already incorporating pavement and lighting maintenance, lifebelt maintenance, statutory sand level measurement and compliance, but there is no reason that we cannot include environmental surveys, litter surveys, water quality measurements, fly tipping and graffiti hot spot identification, parking meter maintenance – the list seems almost endless".

Lessons learned so far...

For Green, the biggest lessons learned so far are:

- To work with the entire team to identify and define all of the scenarios that the asset may encounter throughout its lifetime;
- To use these scenarios to understand, define and map the combinations of data that are required to manage each situation and keep the map in case an unidentified scenario arises;
- To ensure that the relevant data sets are easy to populate and verify for those entering the data as well as simple for current and future users to find and use. ■

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Realising a BIM solution

Building Information Modelling, Computer-Aided Design, and Visualization projects are becoming more complex and demanding, is your hardware is up to the challenge?

Enhanced workstations for professionals in the design and construction industry are now essential to help them realise their full potential and reduce business operating costs. Only by optimising workflow can you enable critical changes and decisions to be made efficiently.

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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, performance 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 computationally intensive simulation task Workstation Specialists recommend the use of a NVIDIA Tesla GPU compute cards. NVIDIA Tesla technology allows you to have supercomputer performance running near silent under your desk.

- Workstation Specialists integrate independent software vendor (ISV) certified components in their workstations, giving customers the confidence that the system is compatible, reliable and has the true performance they 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 warranty.

- Worldwide shipping is also available.

"Enhanced workstations for professionals in the design and construction industry are now essential to help them realise their full potential and reduce business operating costs."

Whether you are in need of single system or a larger offering, improve your company's efficiency and remove bottlenecks with a truly dedicated BIM solution. You no longer need an internal IT specialist to know the correct hardware systems for your requirements. Workstation Specialists will assess your specific needs and tailor the perfect solution to enhance your business and help recover costs.

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Image Courtesy of F10 Studios

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The structural Eurocodes

Dr Graham Couchman, CEO of the Steel Construction Institute details the evolution of Eurocodes and what they mean for today's practitioners...

The lineage of international collaboration of organisations that has led to the current Eurocodes can be traced back to the 1950s. This history is well explained in an excellent article by Prof Roger Johnson of Warwick University published some years ago in the Proceedings of the Institution of Civil Engineers. The article has a subtitle of 'why 40 years', the answer to which lies in some of the details given by Prof Johnson. For example, in the early 1970s the Joint Committee on Composite Structures (JCCS) began preparing a technical document that could act as a basis for international codes on composite (steel-concrete) structures. Progress was slow. Its initial convention was that contributors could speak and write in English, French or German, which presumably was not conducive to speed. As well as taking time, this led to much input from multilingual academics!

Skipping forward 20 years, by the start of 1990 the development of the Eurocodes had been put under the direction of the Comité Européen Normalisation (CEN), whose remit had previously only included standards for products and testing. This was logical, as the Treaty of Rome (1957) had an aim to remove barriers to trade, and both product standards and design codes were deemed to be barriers. Working documents, called ENV drafts, for the major construction materials appeared in the early 1990s. The hope was that these would be used by industry and feedback given to inform the final EN documents, scheduled to appear some time later. Unfortunately not much practical feedback was given (perhaps hard pressed industry felt it had better things to do), and it took more than another decade to write these documents.

Finally, in March 2010, national standards bodies (such as BSI) were required to withdraw the preceding national codes and standards. It is worth noting that in a regulatory environment such as the UK, this did not mean the old standards could no longer be used for an awful lot of designs.

What is happening now?

Although still far from being used for all designs in the UK, the Eurocodes have nevertheless gained much momentum in the past five years or so. This means that the early 1990s aim of having codes that were used by practitioners, who might therefore be able to give valuable feedback, has been achieved. After a number of years of careful planning, a process that will enable this feedback to be considered and reflected is now beginning in earnest.

During 2014, so called 'systematic reviews' were undertaken on a number of Eurocode parts. More will follow. Although it remains almost impossible to persuade most practitioners to give up time to comment (because the rewards from doing so will lie some years in the future), this review has produced some valuable feedback. At the same time funding has been secured to allow an evolution of the Eurocodes. One of the, if not the primary aims of this evolution is to improve the ease of use of the codes. In this context 'ease' is multifaceted, and some of those facets are mutually contradictory, but the intent is clearly good and sensible.

When revised Eurocodes appear around 2020, users should find they better cover common practice, they will contain fewer alternative methods, they are easier to navigate around, and there are fewer

Image courtesy of Caunton Engineering Ltd

inconsistencies between them. Mistakes will hopefully be corrected, ambiguities clarified, and a number of other changes made to improve use. This will all be done within another aim to avoid fundamental change unless it is really necessary (an example might be retaining the current numerous parts of Eurocode 3). The use of 'Eurocode English' looks set to persist!

Why am I telling you this?

My own organisation, SCI, has over 400 member companies who are active in the design and execution (to use a good Eurocode word) of steel and composite structures. Through our technical advisory service we know the problems that practitioners can have when codes are unclear, sometimes incorrect, or lacking in detail or scope. I and a number of my colleagues are active in code development, but there is a limit to what can be achieved, so help is always welcome. Achieving the right result is not always possible – we no longer have to attend meetings run in three languages, but we do have to reach agreement between many interested parties with often fundamentally different philosophies and regulatory systems to satisfy.

Finally, I would encourage all code users to recognise that codes do not contain 'absolute truths'. They contain the best knowledge that was available at the time, sometimes (necessarily) interpreted with a level of subjectivity by those writing the rules. Users of design codes should never blindly trust, even when something has taken 40 years to develop and is pan-national, but rather assure themselves that what they are doing is within what they feel the rule writers would have envisaged. ■

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Coping with demand

Last June, NHBC, the leading warranty and insurance provider for new homes in the UK, announced its biggest recruitment campaign in 30 years by creating more than 100 new frontline technical jobs.

As part of the campaign, NHBC recruited over 80 new building inspectors with new management roles also being created. More surveyors, engineers and special project managers were also recruited to ensure that the appropriate technical support is available for builders and their design teams, both on site and during the design stage.

With 2014 registrations up 9% on 2013's outstanding year the recruitment campaign demonstrates NHBC's commitment to providing the additional support for builders across the country who are facing a new set of challenges as production increases.

Here, we look at four different people involved in the recruitment drive, each with their own story.

Danny Massey

In 2013 NHBC re-opened the doors of its Operations Academy to new recruits for the first time since the economic crisis of 2007.

Danny Massey completed the Academy course a year ago and as part of the recruitment campaign he is now a Building Inspector (BI) for the Central region, covering Bedfordshire, Buckinghamshire and Hertfordshire.

Having joined NHBC in 2011; he has worked across the business including time in technical service support and customer services and is a good example of how the recruitment drive opened up new opportunities for existing members of staff.

Now, a typical day will see Danny visit up to 12 different sites a day – from large scale residential developments nearing completion to single plot developments by smaller builders who may build a handful of homes every few years.

Explaining his new role and the benefits of undertaking NHBC's comprehensive training regime for new inspectors, he said: "It was a good mix of classroom based training, shadowing, accompanied inspections and coaching, as well site-based and written assessment of how well we were doing. It was crucial in helping the trainees get a thorough understanding of being a BI before we actually started the role.

"As housing demand has soared over the last year and a half we will all have an important role to play as builders ramp up production and face a new set of challenges after a number of quiet years where housing volumes have been relatively low.

"Overall it is a highly enjoyable role and it is great to be able to put into practice numerous aspects of the training academy, be out on sites of all sizes and understanding the issues and concerns that builders have as production levels have increased."

Andy Looms

NHBC's recruitment drive also enabled the organisation to employ external candidates with significant industry knowledge. Andy Looms is a former NHBC Pride in the Job award winning site manager who was recruited as an Inspection Manager covering Somerset after working for builders including David Wilson and Persimmon for more than 20 years, most of which time he was a contracts/construction manager.

Currently working his way through the comprehensive training programme which began when he joined the company in October Andy is looking forward to using the many skills learnt on site and transferring them to NHBC.

Andy, who is moving from his West Midlands home to Somerset with his wife, explained; "I decided to apply as I had reached a point in my career where I was looking for a new challenge. Working within the industry for such a long time I had worked with NHBC for many years and it appealed to me to able to transfer my skills and knowledge to the other side of the fence, so to speak, and to have the opportunity to work for a company that values its employees; NHBC has always had this reputation.

"In many ways managing a team of site managers and managing a team of inspectors is quite similar and hopefully I am able to bring a new perspective to the role and to the inspection team.

"The sector has really picked up over the last couple of years and that was another reason behind wanting to join NHBC; there is a real feel-good factor on site and in the office and long may this continue."

Paula Bolam

Having worked at NHBC since 2000, originally in Claims, the recruitment campaign also presented a new opportunity for Paula Bolam. With eight years inspection experience behind her, Paula was able to take advantage of the opportunity to further her career and was appointed Inspection Manager for Norfolk, Suffolk and Cambridgeshire last year.

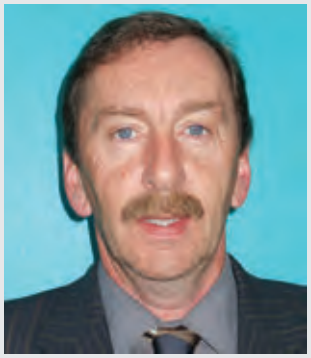
Working as an inspector and witnessing first-hand the property boom leading up to the recession in 2008 and the subsequent recovery of the last two years, Paula believes that the sector is in a very healthy shape in 2015.

"Being out on site during the years when the industry was recovering from the effects of the recession through to the beginning of the upturn at the start of 2013, it is really encouraging to see how builders are adapting and looking ahead to dealing with a very different set of challenges," she said.

"Overall everybody appears to be a lot more positive and up for the challenge of building more high quality homes that the country needs.

"From a personal point of view, working in what has traditionally always been a male-oriented industry has never been an issue and I find that the site managers I meet across the Eastern region enjoy the change and are appreciative of the knowledge and experience I have gained by working at NHBC for the past 15 years.

"The recruitment campaign opened up this new opportunity and new role for me and I am loving every minute of it."



Mark Donlon

Having worked for NHBC for ten years as an Inspection Manager up until May 2013 when he left to work as a Senior Manager at Taylor Wimpey, Mark Donlon has since re-joined the company in his original position, as part of last year's recruitment campaign.

Now covering Sussex and Surrey and managing a team of nine inspectors Mark explains that he originally parted ways with NHBC following a difficult period for the sector ahead of the recovery seen over the last two years.

"It was time for a change for me when I originally left, but once I heard that NHBC would be embarking on its biggest ever recruitment campaign I felt it would be a perfect opportunity to think about returning, with the industry recovering and me being in a position to use the experiences I learned from the builders perspective," he said.

"I am relocating to Croydon to be closer to my new area and have been hugely impressed with the professionalism of everybody involving in the recruitment process to ensure the right people were selected and employed; although I had previously been employed by NHBC for more than a decade I was treated exactly the same as all the other new candidates and recruits."

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Scaffolding training – ensuring best practice

CISRS announces new requirements for the CISRS Part 1 Scaffolding Training course...

CISRS has announced that as of 1st September 2015 it will be a scheme requirement that anyone wishing to attend a CISRS Part 1 Scaffolding Training course must have held a valid CISRS Trainee Scaffolder or Labourer card for a minimum of six months.

Since the scheme began around 40 years ago, in order to be eligible to attend the Part 1 course a delegate must have had a minimum of six months on site experience as a as a Trainee Scaffolder or Labourer working under the direct supervision of a qualified scaffolder. They were not however requested to provide a copy of a valid CISRS card at this stage to demonstrate registration to the scheme and help establish their time in the industry.

The on-going CISRS standardisation programme has helped to highlight this loophole. Around two years ago the CISRS Operative Training Scheme (COTS) course was introduced for new entrant trainees and labourers which allowed a lot of the essential generic health and safety, manual handling and component recognition type training to be delivered in the initial stages of an individual's career within the sector. Anyone applying for a CISRS Trainee or Labourer card after June 2013 was required to complete COTS training.

The introduction of this course allowed the standardisation group to consider reducing time spent on those modules within the Part 1 programme in favour of more up to date industry guidance and best practice e.g. TG20:13, and introduction to scaffold inspection etc. Although it was becoming an increasingly rare occurrence, some delegates were still attending Part 1 courses without having completed COTS training or holding a CISRS Labourer or Trainee card. There have been instances where a delegate will claim to have had the relevant prior on-site experience, however, upon attending the course it is apparent that this is not the case and they will subsequently fail the course.

As such it was agreed by CISRS and the Access and Scaffolding Industry Training Organisation (ASITO) that this loophole should be closed.

The new rule was initially going to be introduced with immediate effect, but it was felt that industry should be given a short notice period to be made aware of the changes to the scheme. This would also accommodate those who had previously booked a Part 1 course prior to the announcement, it has since been confirmed that the rule will now be implemented from 1st September 2015.

Dave Mosley CISRS Scheme Manager said: "We think that this is a sensible change of scheme rules and is basically a case of housekeeping. The standardisation programme has highlighted a few minor anomalies within current scheme criteria and these are now being addressed."

For further details about CISRS card courses, training changes following the introduction of TG20:13, information and dates on courses available, a list of approved training providers, or to find out more about CISRS, please visit www.cisrs.org.uk or email enquiries@cisrs.org.uk . ■

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Proactive building control

Paul Wilkins, Chair of the ACAI outlines the benefits of a proactive building control service delivering competence and independence in the construction sector...

There is no doubt that building control as a professional service has evolved over the last 20 years or so into a highly valued proactive part of the compliance and construction process. This was clearly demonstrated in the Value of Building Control and Compliance Actions Research reports published in 2012.

The introduction of the private sector, firstly in 1985 with NHBC in the residential sector, and the wider expansion in the mid 90's, has surely played a part in this. This initiative found a profession and its professional institutions ready to change and willing to adopt the spirit of Egan, Latham and Bourne by playing its part in removing conflict and barriers from the design and construction processes.

We now have a profession and service that is much more accessible and proactive throughout the pre-application, design and construction phases of a project.

Whilst the 'building inspector' has always been proactive in many respects, perhaps advising on the depth of domestic foundations or domestic simple structural alterations, the days of the poacher/gamekeeper approach has long gone.

The construction industry now benefits from proactive advice on options for achieving compliance whether using 'code compliant' solutions provided by interpretation of the Approved Documents to alternative methods demonstrating compliance with the functional regulations.

This approach to building control potentially raises two issues.

Competence

Can building control professionals and building control bodies demonstrate that they have the necessary competence to provide proactive advice alongside assessment of compliance of potentially complex design solutions?

Building control professionals whether they work in the public or private sectors have to demonstrate high levels of competence across a wide range of construction related subjects both academically and practically in order to achieve professional status with one of the three main professional bodies; RICS, CABE or the CIOB. They then have to demonstrate ongoing competence via the robust CPD requirements of each of the institutions.

With regard to building control bodies, taking the private sector first; Approved Inspectors are one of the most highly regulated disciplines in the construction industry with a robust code of practice and an ongoing audited requirement to demonstrate competence and sound business practice.

I am aware many of our colleagues in the public sector are keen to adopt similar mechanisms to guide their working practices.

Both sectors provide annual KPI returns to the Building Control Performance Standards Advisory Group which include elements demonstrating competence of their workforce.

Independence

The second potential issue raised is that of independence and the balance between proactive advice and design. In order to demonstrate maximum

value to government and society it is essential that building control as a service maintains the underlying principle of a third party independent auditing service.

At the building control body level, in the private sector, independence is dealt with via the regulatory framework where Approved Inspectors are required to demonstrate adequate independence during the approval and ongoing re-approval process.

The balance between proactive advice and design is a matter for individual building control professionals and their professional bodies. The three institutions provide a context via their support and training frameworks, codes of conducts and ethics policies that guide individual building control professionals in using their judgement when advising clients and their agents on achieving compliance. In order to be effective this must always be the case.

In conclusion

The benefit to the construction industry, government and wider society of a modern proactive service is to facilitate the effective delivery of compliant, safe, sustainable and accessible buildings; this, building control is achieving. ■

Paul Wilkins
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Building Control and Planning Working Together to Inform the Future of Sustainable Homes

The Government's on-going initiative to simplify new build housing regulation should see Building Control Bodies and Planning Authorities working closer together to apply the new 'optional requirements' that may be appropriate in respect of individual sites.

Following the Housing Standards Review DCLG published a technical consultation document on 12 September 2014, part of the studies into:

- 'Improving the energy efficiency of buildings and using planning to protect the environment' and

- 'Making the planning system work more efficiently'

The consultation exercise closed on 7 November 2014 and public feedback is currently being analysed.

At Salus, Building Control and Fire Safety Consultants we welcome the Government's determination to simplify the standards that regulate house building in the UK and in ensuring that standards will be maintained and improved. We look forward to early interaction with Planning Authorities to apply any optional requirements considered appropriate.

The Government has utilised the Deregulation Bill to amend the Building Act 1984 to enable Building Regulations to set 'optional requirements' which can be set at a level above the basic minimum requirement level contained in the Building Regulations 2010, these in turn can then be applied by Planning Authorities as planning conditions. Planning Authorities will have to complete a viability assessment to justify that the optional requirements are necessary. Building Control Bodies will then ensure that the optional requirements are delivered on site.

The next step, subject to Parliamentary approval will be for the Government to lay amendments to the Building Regulations 2010 in early 2015 and these are likely to include optional requirements relating to access (Approved Document M) and water efficiency (Approved Document G). It is also proposed to include a new mandatory security Building Regulation requirement to all new homes which will take the form of a new Approved Document.

Outside of the Building Regulation framework but within the above agenda a new standard is being taken forward relating to space which again can be referenced in planning policies.

Unlike all other Building Regulation requirements the optional requirements will not be applicable across the board. They will only become applicable where the local Planning Authority has a plan policy in place that specifically triggers the application of the additional measures.

This could, therefore, create a situation of adjacent Planning Authorities asking for a higher standard of sustainability compliance from each other.

As part of the above proposals it is anticipated that the Code for Sustainable Homes assessment procedure will be wound down and BRE have launched a new voluntary sustainability standard for new homes to allow performance above minimum standards to be recognised.

Further revisions are then likely to update regulations relating to Conservation of Fuel and Power (Approved Document L) which may move the industry closer to the Governments original intention of delivering zero carbon homes by 2016. It is possible that we could see a situation of different levels of Part L compliance dependent upon the Planning Authority by applying the optional requirements procedure described above.

As new Approved Documents start to emerge Salus will launch a series of update seminars for all concerned and work with all our clients to ensure a smooth transition into the new regulations, only applying any additional requirements as appropriate.

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

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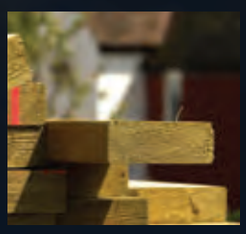

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Private sector safety – new regulations miss electrical danger

Phil Buckle, Director General at the campaigning charity Electrical Safety First explains why the government's response to the review of the Private Rented Sector lost an opportunity to protect both landlords and tenants...

Housing Minister, Brandon Lewis, recently announced that private sector landlords will be required to install smoke alarms on each storey of their property — carbon monoxide alarms in the rooms considered most at risk from high levels of carbon monoxide, and to check the alarms are in working order at the start of any new tenancy.

At Electrical Safety First, we support any improvement in safety for private tenants. But we were extremely disappointed (and concerned) that electrical safety was not included in the Minister's announcement – part of the government's response to the Communities and Local Government Select Committee's Review of the Private Rented Sector (PRS). Yet almost 80% of those who responded to the review supported our call for regular, mandatory electrical checks throughout the sector.

The omission is particularly odd, given that almost half of all domestic fires in Great Britain arise from electricity, creating an estimated £1bn of damage in the last year. The personal cost is, of course, incalculable, but we know electricity kills one person each week and seriously injures 350,000 each year.

For some time now, Electrical Safety First has been campaigning across the UK to improve electrical safety in all housing tenures. Our initial focus however, has been on the PRS. Not only has the sector seen a huge expansion in size – it's now estimated at 9 million, with almost 50% of growth due to families with children – but a third of PRS properties fail to meet basic standards. And research indicates that, while 16% of private tenants' experienced electrical hazards during 2013-14, this figure increased to 20% for tenants with children.

Continued on page 165...

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Phil Buckle, Director General at Electrical Safety First

Continued from page 163...

Given this context, concerns around electrical safety can only increase. Badly maintained properties often have badly maintained electrics, where the danger is invisible until its effect is felt.

"We have called for mandatory, five yearly checks of the electrical installations in all PRS properties (along with any electrical appliances supplied), and for residual current devices, which help prevent electric shocks, to be installed."

We have lobbied hard to bring electrical safety in the sector more on par with gas, which requires landlords to provide an annual gas safety certificate. We have called for mandatory, five yearly checks of the electrical installations in all PRS properties (along with any electrical appliances supplied), and for residual current devices, which help prevent electric shocks, to be installed. The charity successfully pushed for these requirements to be included in the recent Scottish Housing Bill and we are lobbying Westminster and Wales to follow suit.

Currently, registered houses in multiple occupation are already required to have a five year review of the electrical installation. But a blanket requirement for such testing in all PRS homes would reduce confusion around best practice and provide a degree of parity with gas safety. The cost for this essential precaution would be a small price to pay for the protection of people and property. We are working on it. ■

Electrical Safety First has developed various tools to help both landlords and tenants ensure their electrical safety. These include a detailed guide for landlords, a smartphone app, which allows a basic visual check of a property and a socket overload calculator, which can help prevent the risk of fire.

Electrical Safety First
The UK's electrical safety experts

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A plan for evacuation

Disabled people may need extra assistance to evacuate a building safely. Here, Ian Streets explains the procedures...

It is vital for a business to have facilities and procedures in place to help disabled people move around a building – and it is even more important to have effective systems in place to help them get out.

When the need arises to evacuate a building the likelihood is that large numbers of people will be heading for the same exits at the same time. The resulting congestion adds significantly to the difficulties facing disabled people, and dealing with it demands the preparation of GEEPs and PEEPs – generic and personal emergency evacuation plans.

Key to these is the recognition that designing with disabled people in mind goes beyond the provision of physical facilities. Proper planning will help a business overcome potential problems, and that requires research and anticipation.

One of the main issues with a GEEP is a lack of knowledge about how many people will be in a building when the time comes to evacuate, but general business planning can help.

In a department store you know from your takings when you are likely to be at your busiest, with more customers and therefore more staff. So you might want to make sure that at those times you have more staff available who are trained in evacuation procedures. In making that connection you are using sales information to help design your GEEP.

You are not thinking at this stage about specific conditions and impairments, such as emphysema or a knee replacement. It is about planning to evacuate people who have poor mobility rather than a specific condition. That can mean someone using a stick or a wheelchair or who just needs someone to hold onto. It also means proper use of disabled refuges.

Refuges should be provided, the location should be outside the general circulation route and give a minimum of 30 minutes fire protection. It should include a two-way communication system which is accessible – can be reached from a seated position and can be operated with a clenched fist or elbow. It should have an induction loop and should not be too close to the nearest alarm sounder.

There should be a refuge for each protected staircase, clearly signposted and free from obstruction. If you need to assist a disabled person on the first floor during the evacuation of a five-storey building you might use the refuge to let everybody else go past, so you can then move down at the pace of the person with the impairment.

Your GEEP should include making visitors aware of your evacuation process or asking them how they want to receive assistance in the event of an evacuation.

This is particularly important where you have people staying overnight. It is easy for a hotel to establish the needs of individual guests, and accessibility should be part of that. Accessibility requirements could be identified in the same way as finding out if someone wants a smoking room or a non-smoking room, a double or a twin, a bath or a shower. Just ask whether a person would require assistance and how they would like to receive that assistance.

The significance goes beyond common courtesy – you are in a position to make a big difference to the quality of that person's stay, and to whether they are likely to want to come again.

A PEEP is easier to resolve because you are designing it around a known individual. You would send out a confidential questionnaire

asking if staff require assistance with evacuation. Then you might meet with them and write a PEEP. It becomes part of the induction process, but you also need to remember that people's needs change over time.

Someone might acquire an impairment during their employment. They might become temporarily disabled because of an injury or operation, needing a wheelchair or sticks but only for a short period of time.

Once a PEEP has been agreed upon the question arises of whether it is appropriate for other members of staff to be made aware of what's required.

We advised in a case where an occupational health department refused on the grounds of employee confidentiality to inform the health and safety manager pro-actively of new staff who had mobility issues.

We quoted the Equality and Human Rights Commission Code of Practice which says that if an employer's agent or employee, such as the occupational health adviser, knows in that capacity of a worker's or applicant's or potential applicant's disability, the employer will be considered to be aware and will be expected to make reasonable adjustments to its procedures.

At About Access, we provide services concerned with accessibility for disabled people.

Our aim is to help organisations avoid costly and damaging conflict by ensuring that their premises are accessible. We also work to make sure staff are properly trained, and that they recognise disabled people – including customers and colleagues – as individuals whose requirements and treatment are key to the wellbeing of a business.

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) and as such works 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 question or concern, please contact us at info@aboutaccess.co.uk

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...for an inclusive world

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New NHBC registration benefits revealed

With NHBC's annual registration statistics showing a 9% increase in 2014 over the previous year and demand for new homes growing steadily, the industry is facing up to a new set of challenges to build upon this buoyancy, which came on top of the significant sector growth in 2013.

Builders and developers who are registered with NHBC have always benefited from being able to use the NHBC brand in promoting their businesses, to offer Buildmark new home warranty and insurance to their customers, and have access to the technical expertise and advice that NHBC offer in new house building.

Following the findings of the NHBC Foundation research into issues impacting small builders NHBC is now launching a wide range of new benefits to its registered builder and developer customers which support their businesses. Smaller companies often do not have the scale to gain significant discounts on trade materials or business insurances, or the contacts to get deals on land sourcing, surveying and valuation services that are essential to building new homes.

From April 2015 NHBC registered builders and developers will be able to access a new set of free or discounted services that will support their business whether or not they are currently building new homes, enabling smaller building companies to operate at lower costs and with increased professional support.

For example, NHBC has teamed up with TradePoint for registered builders to receive special discounts on building materials. With 360 trade counters across the UK open 7 days a week and for longer working hours than most merchants, their stores are more accessible for the builder customer.

NHBC's support to builders extends to the technical and health & safety helplines which are available for registered builders to call for a range of advice on house building.

NHBC already offers a number of land-related services including market reports, site evaluation reports and land quality endorsement.

To add further value to registered builders NHBC has now agreed a new partnership with Countrywide Properties to provide free access to a dedicated regional land manager for land sourcing.

Countrywide's nationally based land division source quality on and off-market sites throughout the UK, using their local area knowledge and experience of the local planning system to identify the unidentified.

From single plots to strategic land, residential to retirement, the Countrywide land & planning team will listen to a developer's land requirements, provide input and guidance on planning matters and can provide early notifications when suitable land opportunities become available.

Also available is a free pre-site valuation advice service, designed to suit smaller developers who can access Pre-site mortgage related valuation advice from a RICS qualified surveyor and direct contact with a qualified, RICS registered valuer through Countrywide Surveying Services, one of the largest new build valuers in the UK.

Also new as a benefit this year is a 10% discount on asset protection insurance with DUAL Asset Underwriting Ltd on residential and commercial legal indemnity and title insurance products.

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SP205 certification for success

PBC Today outlines how the BAFE SP205 UKAS accredited certification scheme can increase business for those offering fire risk assessment services...

The SSAIB's BAFE SP205 UKAS accredited certification scheme enables anyone who is required by law to carry out a fire risk assessment of a premises, and who employs a specialist third party company to provide this, to demonstrate that they've taken the necessary reasonable steps to comply with their legal obligations and requirements under fire safety legislation.

Last year, the SSAIB Chief Executive, Geoff Tate explained to PBC Today what the scheme means to customers and certificated service providers alike. In explaining BAFE's objective, he said that they want "to bring a single registration scheme to market for each fire protection product or service for which third party certification is considered appropriate, and life safety fire risk assessment is one of the most recently introduced of these."

Obviously, anyone carrying out a fire risk assessment must be competent and have received appropriate specialist training, but whilst the assessor has a duty of care to the organisation involved, the ultimate responsibility for the adequacy of the fire risk assessment rests with the duty holder (normally a company) or responsible person. This follows a change in fire safety law with the introduction, in October 2006, of the Regulatory Reform Order (Fire Safety) 2005.

Given these circumstances, BAFE's SP205 UKAS accredited certification scheme enables those responsible, and required under law to carry out a fire risk assessment of a premises, to employ a specialist third party company to provide this. Taking such a step will allow them to demonstrate that they've taken the necessary reasonable action to comply with their legal obligations and requirements under fire safety legislation.

Geoff Tate went on to say that:

"Besides those responsible for carrying out such an assessment, the new independent third party certification service offered by SSAIB and others will also benefit fire risk assessment providers, who'll be able to use their accreditation to attract end user customers. Certification provides a benchmark recognition of a company's capability in providing high quality fire risk assessments – by showing that they have the required technical and quality management competency, and that their assessors possess the relevant proficiency and knowledge."

Achieving SP205 certification offers accredited providers with a significant marketing tool by enabling them to display a valuable certification mark (including the 'crown and tick' logo). Tate went on to explain that:

"At SSAIB we've invested time and resources in achieving this UKAS accredited approval, so that end users with responsibilities under the law can rest assured that risk assessment service providers holding certification approval will provide fire risk assessments that fully comply with the law." ■

PBC Today
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A smoke alarm victory

Graham Ellicot, CEO of the Fire Industry Association details the long campaign to ensure that smoke alarms are installed in all privately rented homes...

In May 2011 I attended a seminar in the Palace of Westminster given by Devon & Somerset Fire & Rescue Service (FRS) to the 'All Party Fire and Rescue Group' concerning fire safety in rented accommodation, which called for the fitting of hard-wired smoke alarms at the change of a tenancy. The presentation contained compelling detailed evidence gathered throughout the UK which indicated that the fitting of hard-wired smoke alarms in rented accommodation would save a score or more lives per year, and that this was a cost effective measure to further drive down the annual number of fire deaths.

Roughly 18 months later I was in Scotland, in part to hear an update on the Devon & Somerset FRS work. This well written and researched study was 'pushed' by Adrian Sanders MP in his Fire Safety (Protection of Tenants) Private Members Bill. The update in question described a unique toolbox approach to fire safety in rented accommodation.

Indeed at that time, Building Regulations already required the installation of automatic smoke detectors to new dwellings, loft conversions and circulation spaces to extended dwelling. All dwellings were to be fitted with a fire detection and fire alarm system in accordance with BS 5839-6:2004-Grade D-category LD3 standards.

However the government disagreed with the view from Devon & Somerset FRS and the second reading of Adrian Sanders' bill was delayed on several occasions and, in March 2012, the bill failed to complete its passage through the House of Commons and thus could make no further progress. Had the

bill had government support then it is likely that it would have eventually become law. It was difficult then to see any reason other than that of political dogma as to why the government should have failed to support the bill; the dogma in question being the question of extra regulation and red tape problems for landlords.

Adrian Sanders' proposed bill arose out of the deaths by fire of two children in his Torbay constituency. The fire occurred in October 2009 in housing association rented accommodation, and a Devon & Somerset FRS spokesman made the following comments at the

Continued on page 174...

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Continued from page 172...

time; "There were no smoke alarms in the property. This is an absolutely horrific incident, the worst that I have been confronted with in 26 years."

The government was well aware of fire deaths in rented accommodation as Penelope Schofield, the West Sussex Coroner, wrote to them asking that hard-wired smoke alarms be a legal requirement for private landlords' rented accommodation. This request followed three separate fire deaths in West Sussex where battery operated smoke alarms were fitted but the batteries had been removed.

The West Sussex Coroner was quoted as saying, "We've got to remember the private rented sector houses some of the most vulnerable people in society." Ms. Schofield went on to say; "You may have people who have alcohol problems who would rather spend the money on drink than fitting a new battery; you've got elderly people suffering with dementia, they might not even realise that the battery is no longer working or that the battery has been removed."

Indeed, Penelope Schofield was not alone in her views as a BBC report quoted a spokesman from the Residential Landlords Association who said after the West Sussex's Coroner's actions that making mains-connected smoke alarms a legal requirement of private landlords was a good idea.

Plus, the Westminster Government was then out of step with Scotland where the Repairing Obligations require smoke alarms to be fitted in rented accommodation.

And then there was talk in late 2013 of the government considering smoke detection and carbon monoxide alarms as part of an Energy Bill. That interest in part spawned, in February 2014, a Policy Paper entitled 'Review of property conditions in the private rented sector' which included two questions concerning smoke detection and carbon monoxide alarms.

In May 2014, Nick Raynsford MP called on the government to make the provision of smoke alarms mandatory via the introduction of a 10-Minute Rule Bill in the House of Commons to require smoke alarms to be installed in all privately rented homes. The Bill received significant cross-party support and MPs voted in its favour by 245:8.

And now roll forward to March 2015 and the Communities and Local Government Department (DCLG) has made the following announcement:

"Landlords will be required by law to install working smoke and carbon monoxide alarms in their properties, under measures announced by Housing Minister Brandon Lewis today (11 March 2015).The move will help prevent up to 26 deaths and 670 injuries a year.

The measure is expected to take effect from October 2015, and comes with strong support after a consultation on property condition in the private rented sector."

Simply put, the FIA welcomes this announcement which is due to the hard work by many parties over the years including the MPs Adrian Sanders and Nick Raynsford, Devon & Somerset FRS, CFOA and the various Coroners who have had people die in their 'jurisdiction' where there have been no smoke detectors.

Based upon DCLG's own numbers, by the time the law requiring the installation of working smoke alarms and carbon monoxide alarms is enacted there could, since the death of the two children in Torbay, have been 156 preventable deaths and 4,020 preventable injuries.

Mahatma Gandhi once said, "The measure of a country's greatness should be based on how well it cares for its most vulnerable populations". I wonder what he'd think about a six year wait since the horrific fire in Adrian Sanders' constituency that killed two children. ■

Graham Ellicot
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CDM2015 and domestic projects

James Ritchie of The Association for Project Safety answers the questions most raised about the new CDM Regulations with regard to domestic projects...

The phone line has been red hot since the beginning of the year. Everyone wants to know the implications of the new CDM Regulations; what they mean for their projects, clients, designers and contractors. "Can I be a Principal Designer?" "My client wants to appoint me to carry on giving him advice on his construction projects – is that allowed?" "How strict is the Principal Designer duty to ensure designers comply with the regulations?" "What is going to happen on domestic projects?" "What if my domestic client appoints all the contractors separately?"

CDM2015 is aimed at small and domestic projects – the very area where most construction accidents and incidents are occurring – and many of the calls are from architects who do nothing but domestic projects.

So what do Domestic Clients Need to do?

CDM2015 understands that most domestic clients will not be familiar with design or construction projects or associated legislation. If someone is about to alter or extend their house or buildings, thinking of putting up a new one or demolishing an existing one, then the Construction (Design and Management) Regulations 2015 (CDM2015) place a number of specific duties on them as a construction Client.

The aim of the CDM2015 Regulations is to make health and safety an essential and integral part of the planning and management of projects and to make sure that everyone works together to reduce the risk to the health or safety of those who work on the structure, who may be affected by these works, or who will use it once it's completed. A domestic client is someone who has construction work done on their own home, or the home of a family member which is not in connection with a business. Unlike CDM2007, domestic clients have duties under CDM2015.

The extent of these duties varies with the type of project involved. On projects that are likely to involve more than one contractor, the domestic client is required to appoint a Principal Designer before significant detailed design work starts so that they can advise and assist the client with their health and safety duties and plan, manage, monitor and co-ordinate the health & safety of the pre-construction phase of the project. The Principal Designer is a designer (architect, building surveyor or engineer for example) who can demonstrate to the client that they have knowledge, skill and experience of CDM2015 and understand the process of design risk management.

When clients are talking to a designer or designers about their project they should check that the designer has the capability and experience to do the work. A designer might be a member of one of the following professional bodies – ARB, RIBA, RIAS, CIAT, RICS, IStructE etc. and, in order to carry out the Principal Designer role, should have an accreditation in construction health and safety risk management (Registered membership of APS for example) or can provide evidence of having undertaken appropriate training on CDM2015.

The Regulations recognise that Clients hold the power to influence and control the designers and contractors they engage or appoint on a project, and therefore that the ultimate responsibility for the achievement of a safe and healthy project is in your hands as much as theirs.

The Regulations are about making sure that there is:

- Early appointment or engagement of capable key people or organisations that have sufficient skills, knowledge, experience and resources;
- A realistic project programme which gives enough time for planning and programming as well as carrying out the work itself;
- Early identification and reduction of construction risks and proper management of those that remain, so that construction is safe and does not damage the health of workers or others;
- Co-operation between all involved in a project and effective coordination regarding Health and Safety issues;
- Adequate welfare facilities provided from the start and throughout the construction phase; and that
- Appropriate information is made available to the right people at the right time so that work can be carried out safely and without risk to health.

However, it is very important that the amount of effort devoted to managing health and safety is kept appropriate and proportionate to the complexity of the project and level of risks. It is particularly important to be aware of, and avoid, unnecessary paperwork. Most domestic work should be relatively simple and therefore require minimal paperwork.

What type of domestic project is being planned?
Irrespective of size or duration, the CDM2015 regulations separate construction projects into two types – dependent on how many contractors will be involved in the project.

The two types are:

Projects with only one contractor – where the project will only require one contractor working on the site. An example of this might be an electrician rewiring the house or a plumber installing a replacement boiler, when no other trades are required to do any work. Where the project only involves one contractor, the client duties specified in CDM2015 Regulation 4(1) to (7) and Regulation 6, must be carried out by the contractor. The contractor needs to undertake these duties in addition to their own duties as a contractor.

When clients are selecting a contractor, they should ensure that the contractor is aware of the client duties under CDM2015 as well as their own contractor duties. Clients are advised to ask for examples of how the contractor has done this on previous projects.

Projects that are likely to involve more than one contractor – this will be the majority of projects. For example, if the work will require a bricklayer, electrician, plumber, roofer and plasterer, then that is five contractors.

If it is likely that the project will require more than one contractor, then the client must appoint a designer with control over the pre-construction phase as Principal Designer and a contractor with control over the construction phase as Principal Contractor. These appointments must be made as soon as practicable and before the construction phase begins. If the client fails to make these appointments, then the designer in control of the pre-construction phase is deemed to be the Principal Designer and the contractor in control of the construction phase is deemed to be the Principal Contractor.

If the client is in doubt, they should assume that the project will require more than one contractor. The appointed designer or contractor should be able to help clients decide or alternatively clients can contact the free Public CDM Helpline as a source of independent advice on 0333 088 2015. ■

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Head of External Affairs and Deputy Chief Executive
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- monitor & improve health and safety.
- management of resource and risk without unnecessary bureaucracy.
- focus on effective planning and management throughout the entire project lifecycle.

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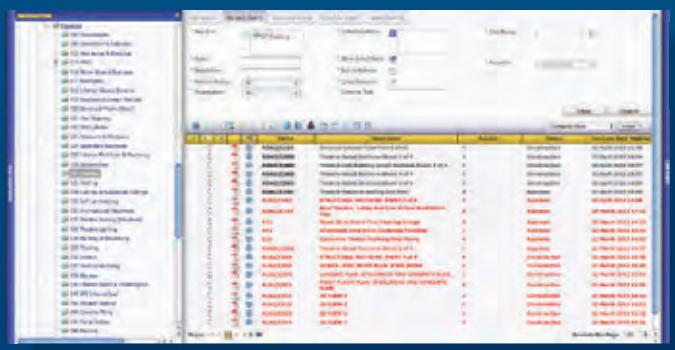
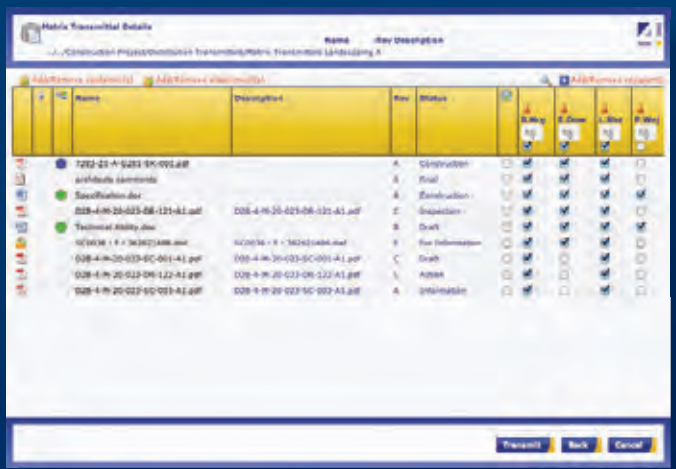


4Projects makes it simple to gather the information required to compile Health & Safety and O&M files.



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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.

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

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 (CDM2015) are in force on 6th April 2015, with all construction projects commencing after that date having to fully comply with the requirements.

Additional training will be required to update all of the duty holders with the amended regulations and guidances.

The courses available from Callsafe Services Limited for CDM2015 are described below:

CDM2015 Briefing

This 4.5 hours course is designed to provide personnel who perform the duties of client, project manager, designer, principal contractor and contractor, who are familiar with CDM2007, with an understanding of the requirements of the CDM Regulations 2015.

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.

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.

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.

CDM2015 Principal Contractor and Contractors

This 1 day course is designed to provide principal contractors and contractors with the construction health and safety management requirements of the Construction (Design and Management) Regulations 2015, including the preparation of the construction phase plan, which is required for all projects, even those with only one contractor.

CDM2015 APS Certificate in the Management of Pre-construction Health and Safety

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 developed for accreditation by the Association for Project Safety (APS).

CDM2015 APS Certificate in Principal Designer Service

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. This course is currently being developed for accreditation by the Association for Project Safety (APS).

CDM2015 APS Design Risk Management

This 2 day course is aimed at Design Risk Managers and Design Managers who do not lead the Principal Designer team, but who manage the requirements of design risk and CDM2015 for Designers. The course could be suitable for Principal Designers if they are experienced in the design requirements of CDM2007. This course has been re-accredited, after being amended for CDM2015, by the Association for Project Safety (APS).

In-House Courses

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.

Public Courses

Some of the above courses are occasionally available as publicly available courses will also be arranged for some of the courses.

The CDM2015 APS Design Risk Management course is now available as a public course for individual delegates to attend on Wednesday & Thursday, 27th and 28th May 2015 at Colwich House, Colwich, Staffordshire, (Ref: ADRM150527), at £650.00 per delegate, plus VAT

Further details of these, and other, courses can be found at: www.callsafe-services.co.uk , or by contacting Gemma Esprey at: gemma.esprey@callsafe-services.co.uk or by phone on: 01889 577701.

Callsafe Services Ltd

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CDM 2015 for FM

Mike Packham, Partner of Bernard Williams Associates and BIFM member examines how the new CDM regulations are likely to impact the FM sector...

Like many Facilities Managers I suspect, my involvement with Construction, Design and Management (CDM) in the past has been fairly limited – essentially to those occasions when I have been involved with one of the capital expenditure budget funded construction projects that most organisations will have needed to undertake at some stage of their development. However, the scope of the new CDM regulations is such that this scenario is about to fundamentally change. In the future, FM's are going to have to pay far more attention to this aspect of the regulatory framework than has previously been the case.

Why is this? Well, whilst the requirements for notification to the Health and Safety Executive (HSE) have been relaxed, the definition of what constitutes 'construction' has been broadened such that FM works are now clearly included. Thus, many of the minor works projects and maintenance activities which form a core element of the FM's workload, will now fall within the scope of the CDM regulations for the first time. This situation is further complicated by an additional requirement of the new regulations, which also now relate to any works involving more than one contractor – something which I think we can all recognise as something that is fairly common in an FM context.

Alongside this, the regulations place new liabilities on the client in several areas – in particular they must ensure that their advisors are competent to carry out the required duties. Three distinct 'advisor' roles have been identified, ie Principal Designer, Principal Contractor and Client Advisor; these roles have been more than adequately explained in related articles and I do not therefore intend to reiterate them here. Suffice to say though, that where advisors are not appointed, then the respective CDM duties will fall to the client organisation.

For most organisations the logical choice for where all of these new client responsibilities should lie is with the FM department; this is regardless of whether any 'advisors' are appointed or not. Where there are no separate specialist advisor appointments, then the FM is likely to find themselves directly responsible for undertaking the CDM related project activities, perhaps being involved in the preparation of the construction phase plan. Even where separate appointments are made, the FM is likely to find themselves involved in the associated procurement and appointment process.

So what does all of this mean in practical terms? Firstly, I think we all need to recognise that all of this is not going to come without cost and we therefore need to make appropriate provision when we are putting our FM budgets together. Secondly, and more importantly, we need to recognise and understand our new organisational CDM responsibilities and ensure that we have access to an appropriate level of expertise – either through internal or external resources or, more likely, through a combination of the two. ■

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Q. Have you amended your policies and procedures to reflect the current legislation and practices?

Q. Are your employees competent to perform their duties?

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Q. Do you manage your organisation and projects without copious amounts of paper?

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Excellence in workplace safety and health

Behavioural safety is a key part of a business's journey towards ensuring excellence in workplace safety and health. Here Jill Joyce, Senior Policy & Research Adviser at the Institution of Occupational Safety and Health (IOSH) explains the process that companies can take...

Behavioural safety programmes can help to prevent work related accidents and diseases, which are expensive for companies. Research has shown that up to 80% of work related accidents are caused by employees' behaviour.[1] Behavioural safety is about identifying bad habits that could cause accidents or lead to ill health and reinforcing good habits. It's important not to confuse this approach with inspections, which are looking for unsafe conditions. Safe behaviour is regarded as a critical work related skill so unsafe behaviours can act as an early warning system for accidents and incidents. If we measure these behaviours, this provides information we can use proactively to improve workplace safety and health.

What do organisations need to do before introducing a behavioural safety programme?
If a behavioural safety programme is to be effective it must be implemented well. There are several stages to follow for a successful implementation. The first is to assess whether the company is ready culturally for such a programme. For example is there management commitment to the idea, does the company have a good internal communication strategy and is there a 'fair blame' culture? A survey could be carried out before the programme starts to measure the safety climate.[2]

It is essential to have support from both the management and work force. The best way to gain support from employees is to involve them in the programme. A steering group needs to be set up to oversee the programme and it is important that this is representative of the whole workforce.

The next step is to train the observers how to identify critical safety behaviours, what to record and how to provide feedback. It's important that everyone is using the same criteria to judge behaviours. It is usual to

compile a checklist of critical behaviours. These can be based on analysis of previous accidents or incidents. Near misses are particularly important to consider as they may give an indication of behaviours that could have led to accidents. When the checklist is ready, it is useful to establish a base line by conducting initial observations and noting the current level of safe behaviours. This enables future progress on the programme to be measured. [3, 4]

Then there follows a continuous loop of observation, feedback and review and if necessary training. It's important that feedback is phrased positively so that safe behaviours are reinforced. For example, someone who is acting safely would be praised, but someone who was not would be told how they could change their behaviour without apportioning blame to them. The data from the observation process can be used to examine trends and identify areas for improvement. Participative goals that employees help to set are more effective.[5] Rewards can be given for meeting safe working goals, for example at the London Olympic Park, these ranged from verbal praise to monetary rewards, vouchers, knock off early schemes, T shirts and fleeces etc.[6]

Visible leadership is important

Managers need to show commitment to the process and can do so by allowing observers time to conduct their observations and encouraging employees to report problems with safety and health. They should praise individuals they see working safely and ensure there are resources available if any corrective actions are necessary.

It's also important to understand why employees might behave unsafely. For example, do work deadlines mean that they have to cut corners (for example not using a mask because it is uncomfortable and a job will not take long to do)? Do employees understand the risks associated with a particular task or are there ergonomic factors that prevent them behaving safely? At the London Olympic Park construction site, employees handed out yellow and red cards to highlight unsafe behaviour. These were followed up with a discussion with the employees concerned to establish why they acted unsafely.

Jill Joyce
Senior Policy & Research Adviser

Behaviour based approaches work best when the physical environment and plant are well maintained and procedures are in place. The benefits of introducing a behavioural safety programme within an organisation is the opportunity it provides for the whole workforce to co-operate together proactively to continuously improve safety and health. ■

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Following the correct party wall procedures

James Jackson, Head of Training and Education with the Faculty of Party Wall Surveyors emphasises the correct procedures to follow under the Party Wall etc. Act 1996...

Ensuring that correct procedures are put in place to guarantee that the service of party wall notices and their subsequent awards are valid need not be an onerous task, despite the fact that so many members of the general public when serving their own notices and, indeed, party wall surveyors, fail to follow the correct procedures that are necessary to ensure that both notices and awards are all served correctly.

Duties of Owners

First and foremost, it must be made clear to persons who may be seeking party wall advice that it is the duty of a building owner to serve the appropriate notice or notices upon all adjoining owners. In absolute terms – NO NOTICES means NO RIGHTS under the terminology of the Party Wall etc. Act 1996.

Identification and validity of Owners

It is essential to establish who is a building owner. A building owner is a person, persons or body corporate who owns the freehold of a property or plot of land, or who possesses a leasehold interest in the same, providing that the leasehold interest is for more than one year. When serving party wall notices all persons who are owners must sign the notice or authorise an agent to act on behalf of the building owner, or alternatively when acting as a body corporate, a duly authorised representative of that organisation i.e. a director or company secretary must have been appropriately authorised to act on behalf of the organisation.

How does one identify a building owner? Merely asking a person if they own a property is not sufficient. It will lead to the most amazing type of replies and, as has often been said – trust no-one. The most reliable and satisfactory way in which to identify ownership is to obtain access to this information from the Land Registry web site. For the princely sum of three pounds it will be possible to find the most reliable source of who owns property throughout the whole of the United Kingdom. Not only will this provide the most reliable source of such information, it will also stand you in good stead if the ownership of a particular property is ever called into question.

Identification of owners is paramount, and not only is it necessary to identify the building owner(s) but the same procedure should, likewise, be followed to identify all of the adjoining owners.

To avoid the risk of a party wall award being appealed by either of the appointing owners it is essential for party wall surveyors to create a good "Paper Trail" which must deal with all of the following issues:

- Letters of Appointment
- Service of Notices
- Agency and Statutory Roles
- The Third Surveyor (where applicable)

Letters of Appointment

Building Owners may discharge their Party Wall duties via agency providing that all Building Owners subscribe to the letters of Authorisation for the Agent to serve Party Wall Notices on their behalf. It is common practice for letters of Authorisation to continue with the statement "In the event of a dispute

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arising I/we authorise you (naming personally the Party Wall Surveyor) to settle all matters in dispute by Award and to make any further appointments on my/our behalf (see standard Faculty of Party Wall Surveyors letters in this regard).

Letters of Appointment must be directed to an individual only. Corporate organisations cannot be appointed to act as Party Wall Surveyors.

Service of Notices
Party Wall Notices must be served upon all adjoining owners for all elements of works which are notifiable under the Party Wall etc. Act 1996 and, to ensure their validity they must contain three essentials:

- The name(s) and address(es) of all of the Building Owner(s)
- The nature and particulars of the proposed works
- The date on which the proposed works will commence

N.B. Additionally, where a Notice is served under Section 6 of the Act, plans and sections of the proposed works showing the relative relationship with Adjoining Owner's foundations must also be provided.

Agency and Statutory Roles
Building Owners may discharge their duties to serve Party Wall Notices via Agency i.e. by authorising another person to act on their behalf. This duty is normally discharged by a Party Wall Surveyor acting in anticipation of a dispute arising.

Until such time as a dispute does arise, the Party Wall Surveyor is not acting in a statutory capacity; he is merely discharging his Client's responsibilities and duties.

The agent's role will only change to a Statutory Appointee if there is actual or deemed dissent from the Notices served upon the Adjoining Owner(s) and the letter of authorisation further confirms the appointment of the named Agent "in the event of a dispute arising".

Life and expiration of Notices
Notices shall cease to have effect if the work to which they relate has not begun within the period of twelve months beginning with the day on which the Notices are served and also if the work is not prosecuted with due diligence.

These conditions shall apply only where consent is granted to the Notices.

Where there is dissent to the Notices, and Party Wall Surveyors are appointed to prepare Awards, the life of the Notices becomes indefinite. It is established custom and practice however, for Party Wall Awards to give a reasonable life expectancy to the works. It is also established custom and practice for Party Wall Surveyors to incorporate within their Awards the right for them to prepare and serve a further, or further Awards (as the case may be), to ensure that the process is not thwarted if and when additional matters need to be dealt with

Adjoining Owners replies to Notices
The Adjoining Owners have a number of options when Party Wall Notices have been served upon them; namely:

- They may consent to the Notifiable works
- They may dissent from the Notice and agree to the Building Owners Surveyor acting as "The Agreed Surveyor"
- They may dissent from the Notice and choose to appoint their own Surveyor who will become an "Appointed Surveyor"

- They may choose to ignore the Notice. Should they do so for a period of fourteen days after service of the Notice a dispute is deemed to have arisen. Once this has occurred the Building Owner (or his Surveyor) may serve a further notice giving the Adjoining Owner a further ten days in which to appoint a Surveyor.

- If the Adjoining Owner ignores the further notice the Building Owner (or his Surveyor) may appoint a Surveyor to act on behalf of the Adjoining Owner under Section 10 (4) (b) of the Act.

Serving the Award

Party Wall Awards are always served. Use of the words "deliver" "issue" "post" etc. are to be discouraged and awards are never "published". They are private documents between the respective parties and are to be served "forthwith" upon the Appointing Owners.

An Appointed Surveyor cannot refuse to sign an Award until his costs have been paid to him. A blanket refusal to do so from an Appointed Surveyor should be met with a statement that his actions are improper and that the Award will be served without him and may also be served without reference to his costs being included within it.

There is a Duty of Care placed upon Appointed Surveyors to inform their Owners that they have a right of appeal against a served Party Wall Award which must be made in a County Court within fourteen days of the date of service of the Award.

Failure to inform Owners of this right of appeal is a dereliction of duty.

Third Surveyor's may call for their costs to be met by both of the Parties prior to the service of his Award. After service of his Award, the Third Surveyor may then choose to reimburse them in direct proportion as directed within his Award.

Third Surveyors' Awards may be appealed in the same way as Appointed Surveyors' Awards. i.e. via an appeal to the County Courts made within fourteen days of the date of the Award.

Costs and Payment

It is always "Costs" that are referred to within Party Wall Awards, and these costs may contain Surveyor's fees and other disbursements accordingly. It is established custom and practice that Adjoining Owner's Surveyor's costs are generally incorporated into Party Wall Awards thereby committing the particular Owner against whom costs have been awarded to the responsibility for "Third Party" fees and costs. It is also good practice to Award the Building Owner's Surveyor's costs within the Award thereby making the recovery of such costs from a defaulting Owner a more certain process.

If Party Wall Surveyors are required to involve specialist services or engage other professional disciplines they are empowered to do so and such costs of doing so may be incorporated within the Award. ■

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The issue of fees for a party wall

Sara Burr, Chair of The Pyramus and Thisbe Club warns of the potential under the Party Wall etc Act 1996 of escalating fees should a dispute arise...

In the main, The Party Wall etc Act 1996, when followed correctly, is an effective means of allowing works to proceed and can protect both the owner and adjoining owner. However, as I explain here, both parties do need to be aware of any escalating costs whereby they are agreeing to pay any shortfall that is not awarded. Knowing what you may be liable for could mean the difference between a harmonious solution or one where the costs far outweigh the work being undertaken.

The general consensus is that the building owner that is doing the work should therefore pay the adjoining owners costs. This makes perfect sense and is all well and good until the adjoining owner sees the process as an exercise to stop the works rather than to facilitate them. Surveyors and engineers have the ability to rack up fees unreasonably if the process isn't carefully controlled, and the adjoining owner should be aware that if fees aren't agreed as part of the award process, they could become liable.

Adjoining owners should be very wary of signing Letters of Appointment whereby they are agreeing to pay any shortfall that is not awarded. This is a means of surveyors creating a contract between themselves and the adjoining owner where there would not, under normal circumstances, be one. The majority of party wall matters end in harmony but some don't. Some surveyors try to use the issue of fees to delay matters unreasonably which then leads to building owners giving in to unreasonable fees to get the award that they need to be able to start, or some owners starting work because they have got fed up with the delays and cannot afford the time/cost implications.

Sara Burr BSc(hons) MRICS Member
National and London Committees of the Pyramus & Thisbe Club

So the implications of starting work without an award, the risk of injunction, not being able to sell the property and what happens if damage is caused are all areas that could see fees increasing. Some surveyors use all of these threats to obtain unreasonable fees and these situations are often the subject of third surveyor referrals. Again, third surveyor referrals add to the costs and the potential delay. Who wants to pay for a third surveyor award and who will the third surveyor award fees to in order to see what the award says. I expect there are many third surveyor awards still not been served. ■

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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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The evolution of Party Walls

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

1900-1950

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

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

1950-2003

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

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

2003-2010

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

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

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

2010-Present

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

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

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

Summary

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

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

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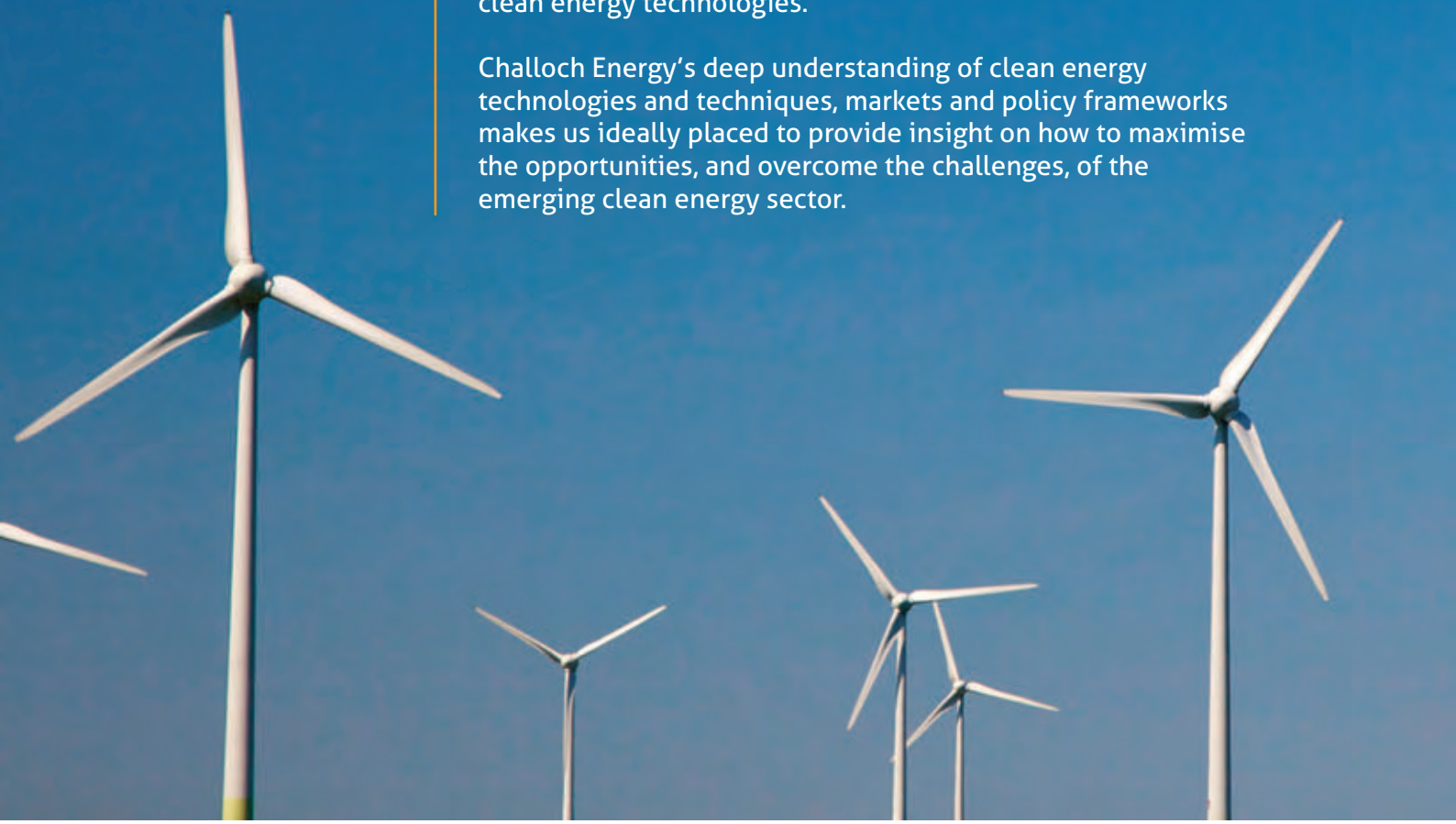

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Local residents at the launch of Warm Up Bristol

Warm Up Bristol: City-wide energy efficiency

A part of Bristol's status as 2015 European Green Capital involves becoming the UK's most energy efficient major city. Here, the Council outline their Warm Up Bristol initiative targeting poorly insulated and energy inefficient homes...

Bristol has some of the oldest housing stock in Europe and each year in the city around £108m is spent on heating homes, a third of which could be saved if all houses were insulated in line with current building standards. That's the equivalent of the UK average annual heating bill for 140,000 houses.

In response to this issue, Bristol City Council recently launched Warm Up Bristol, an initiative offering up to 45 different home improvement measures, designed to make houses across the city warmer, cosier and more energy efficient.

The programme kicked off in October 2014 and will run for four years during which time the team aim to fit 30,000 measures across Bristol to help citizens save money and energy.

It's not a one-size fits all solution and measures available range from solid wall insulation to draught proofing, double glazing and new boilers, depending on the best solution for a property. The ambition is to offer something for everyone and advisers from the council's delivery partner, Climate Energy, will be visiting every home in the city over the period to tell people about the scheme.

At the heart of Warm Up Bristol is a community-led approach. To get the initiative off the ground and engage people from the grass-roots up, Bristol City Council has been working with local community energy groups such as the Bristol Energy Network and Easton Energy Group. These groups have been helping to spread the word about the scheme and effectively 'warm up' areas before advisers go around speaking to people – and this approach is working well.

Mareike Schmidt, Service Manager of the council's Energy Service, said: "We're running the most ambitious energy efficiency scheme in the country in Bristol as we want to help people improve their homes.

"It's not just about energy efficiency and carbon savings, but rather the benefit of living in a cosy home. We want to give people one less thing to worry about and with energy bills continuing to rise, insulating your home is one way to counter rising costs in the long-term."

To make the benefits of installing energy efficiency measures more palpable, the team has opened a Warm Up Bristol show home in Easton, which is open to the public three days a week. It's complete with an energy-themed mural on the outside so it's easily identifiable and is staffed by the volunteers from Easton Energy Group who are on hand to tell people about the scheme and what's on offer.

Mareike continued: "One of the barriers to people insulating their homes is that it can be quite intangible and hard to imagine what solid wall insulation and other energy efficiency measures look like in practice. The show home helps us overcome these issues as people can come and take a look around and speak to a local community group about the scheme if they want to find out more.

"As well as local community energy groups, we've been working with Streets Alive which is a local charity who organise street parties to engage people. We want to make insulation fun and engage people in any way we can as it's a hugely important scheme to the city."

The show home is fully equipped with external and internal wall insulation, underfloor insulation, loft insulation, new double-glazed windows, a humidity sensitive ventilation system, new gas condensing boiler and water saving features as well as rain water which is used to feed the garden

Around the corner in Easton, the Demonstrator Streets can be found. These are the homes of people who won a competition to have solid wall insulation fitted on their homes. The competition was organised by Bristol City Council to build a buzz around Warm Up Bristol ahead of launch and it was hugely successful as over 100 people entered in Easton alone.

In the context of Bristol's European Green Capital year, energy is one of the key themes and Warm Up Bristol is central to this. Delivering the programme will help the city reach its ambitious carbon reduction targets, whilst also helping Bristol along the way to becoming the UK's most energy efficient major city. Warm Up Bristol is also supporting jobs in the industry with local SMEs doing the majority of the installations.

Mayor of Bristol, George Ferguson, has been championing the scheme from the offset. He said: "Warm Up Bristol gives a huge opportunity for us to address householders' energy needs and costs. We are working with local communities with the ambition to engage residents right across the city. Real change comes from the community and I'd like to personally encourage all to grasp the nettle.

"This is a cause that is central to our Green Capital status and will lay a vital part of the foundations for Bristol to be the most sustainable city in years to come."

Funding for Warm Up Bristol has come largely from the European Investment Bank under the European Local Energy Assistance ELENA programme, as well as Energy Company Obligation funding provided by EDF Energy, and £7.2m from the Department of Energy and Climate Change – the largest funding pot allocated to any local authority. There is special funding available for landlords with the lowest energy efficiency rated properties, as well as funding for what's known as 'Green Deal Communities' in Bristol who have particularly hard to treat properties. ■

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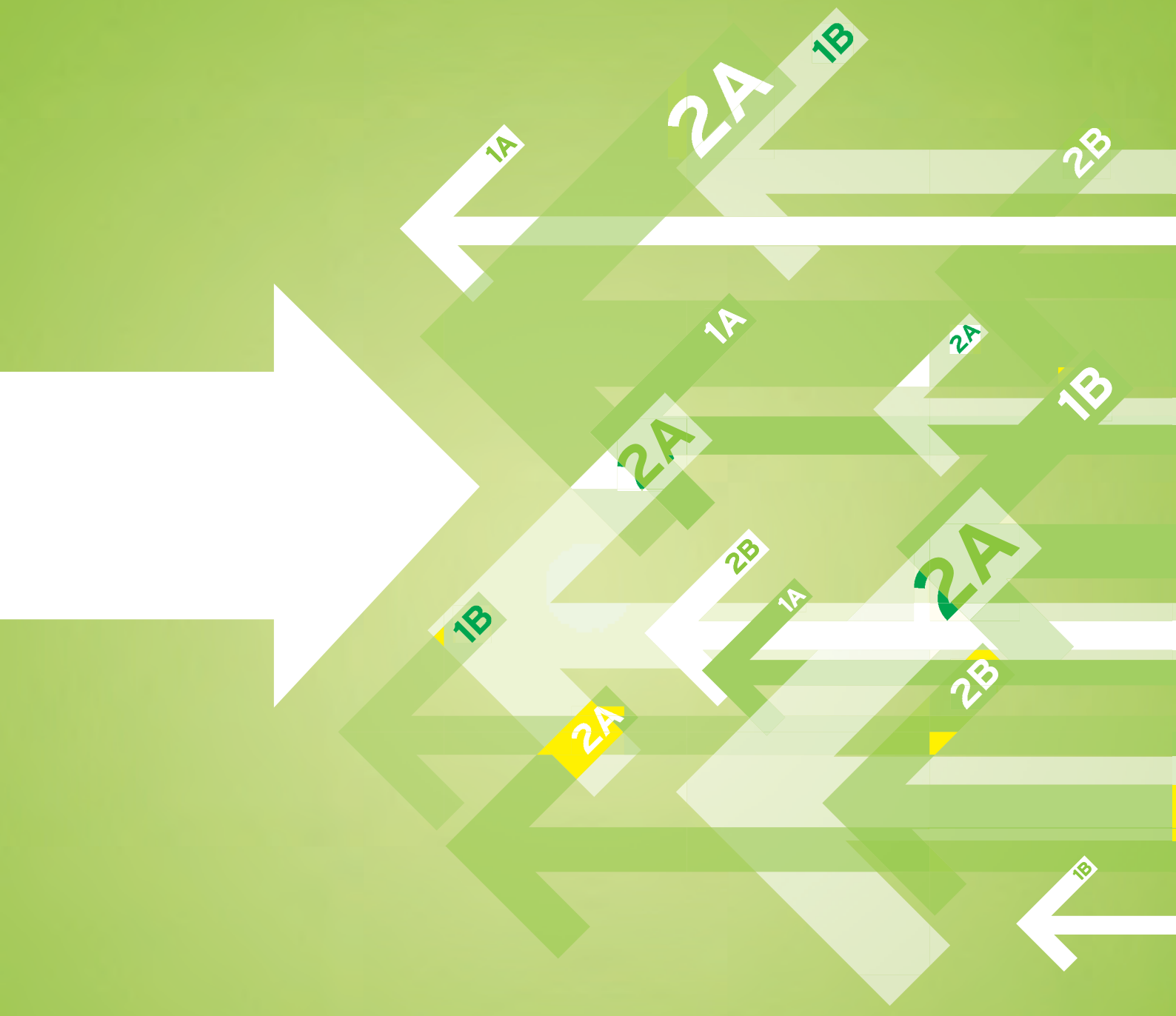

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Competent retrofit

Mark Weaver, Project Director for Retrofit at Saint-Gobain in the UK describes how the retrofit industry can become competent experts...

It is widely recognised that developing a competent supply chain of designers, surveyors and installers is critical to the retrofit market, especially given the increasing focus on improving the existing building stock with technologies such as solid wall insulation, floor insulation and more efficient glazing. Saint-Gobain is at the forefront of providing routes to competence across different industry roles. Its continued commitment is demonstrated through its new partnership with CoRE, the Centre of Refurbishment Excellence, the leading network of retrofit experts.

For many years now, Saint-Gobain has been providing practical training courses through a nationwide network of Technical Academies. Mark Weaver, Project Director for Retrofit for Saint-Gobain explains "having delivered over 70,000 hours of training since 2011 at our Technical Academies, Saint-Gobain plays a leading role in providing skills and training to the construction industry, something that is hugely important in supporting growth and ensuring that we are able to construct and retrofit better performing buildings."

The most popular of these courses are the drylining, plastering and internal wall insulation courses provided by British Gypsum, external wall insulation, rendering and floor screeding by Weber and technical insulation by Isover. In retrofit, these lead to trained installers who can be further assessed on site to gain a personalised card (recognising their competence) from the system designer. Weber alone has issued over 1000 cards as key components to the PAS2030 accreditation of installers. Saint-Gobain companies were deeply involved in the development of the SWIGA Quality Framework for the solid wall insulation 25 year guarantee scheme.

Saint-Gobain has teamed up with CoRE to become a Founder Sponsor of the CoRE Fellowship, which draws together leading retrofit practitioners from construction, design and academia. Saint-Gobain's support will enable CoRE to extend its activities, especially the delivery of its award-winning Retrofit Coordinator Diploma programme. This Diploma includes modules which focus on best practice principles that are at the heart of Saint-Gobain's retrofit strategy of fabric-first, whole-house retrofit, technical expertise, innovation and training for competent design and installation. The nationally accredited CoRE Diploma provides knowledge and skills essential to the construction professional undertaking the

refurbishment and improvement of existing housing stock. Modules include the assessing of buildings to determine the appropriate interventions, understanding of fabric insulation, building services and ventilation, the fundamentals of solid wall insulation and retrofitting traditional buildings (a full list of modules is in the box opposite, below, etc)

The CoRE training centre, in Stoke-on-Trent, complements Saint-Gobain's nationwide network of Technical Academies, its Innovation Centre in London and the Greenworks Training Academy in Birmingham. CoRE retrofit courses will now be held at these locations, enabling attendees to learn more about additional training available from Saint-Gobain, including practical installation training in retrofit technologies such as Internal and External Wall Insulation systems. Mark Weaver explains more; "CoRE's focus on developing the industry's practical experience is what Saint-Gobain values and supports in order to grow the retrofit sector for a more sustainable future. We are proud to become the lead supporter of this programme and we look forward to a long partnership. The quality of the CoRE Diploma is already highly regarded by virtue of the experts providing the course material and Diploma training. What better environment to receive this training than at a Saint-Gobain Technical Academy where products are on display in our well-equipped showrooms and the dedicated practical training facilities are on site? Candidates can understand how these fabric technologies perform and learn about the practical training available to those installing Saint-Gobain's retrofit systems. We believe that Saint-Gobain is the only supplier able to fully deliver training at all stages of retrofit – to designers and specifiers, assessors and surveyors, installers and merchant staff – in the best facilities within the construction sector."

Speaking on behalf of CoRE, CEO David Pierpoint said: "Saint Gobain's commitment to the retrofit industry has been evident for many years. It echoes our ethos and our commitment to sharing knowledge openly and widely. It is a partnership that is good news for professionals in the retrofit industry, bringing wider access to expertise and support available to them."

Retrofit Coordinator Diploma courses are excellent value at £2,000 per ten module programme, and if booked through a Saint-Gobain referral, are subject to a 10% discount. Courses for the second half of 2015 are taking bookings now and can be booked through http://coretraining.wpengine.com/diplomas/retrofit-coordinator/ or by calling CoRE on 01782 792900.

More details on the training available from Saint-Gobain at the various Technical Academies can be found at: www.saint-gobain.co.uk/training .

The Ten Modules of the CoRE Retrofit Diploma (one day per module):

- Introduction to Domestic Retrofit
- Assessing Dwellings for Retrofit
- Funding Domestic Retrofit
- Building Fabric Retrofit
- Building Services Retrofit
- Fundamentals of Solid Wall Insulation
- Retrofit Ventilation
- Retrofit Building Physics
- Responsible Retrofit of Traditional Buildings
- Coordination & Risk Management

RETROFIT COORDINATOR

SAINT-GOBAIN

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Isover's Optima IWI system insulates Bolton Home

As part of a trial into solid wall insulation by the Energy Saving Trust, Saint-Gobain Isover installed its newly launched Optima Internal Wall Insulation (IWI) system into a three bedroom family home in Bolton, Greater Manchester.

Recent figures have revealed that the installation resulted in a reduction of the wall U-values by 84 per cent, contributing to 26 per cent less fuel being used to heat the house – a saving of £312 per year. As a solid wall property, this work would eligible for significant grant funding under the current Energy Company Obligation (ECO), as well as being a measure suitable for a Green Deal plan.

Background

At the end of 2011, the Energy Saving Trust (EST) commenced the largest in situ solid wall insulation trial ever undertaken in England. By gathering a detailed data set from more than 75 houses across the country, the EST aimed to develop a clearer understanding of building performance in relation to domestic solid wall insulation.

As part of this project, Isover's Optima IWI system was installed at the Bolton property, in order to better understand the effectiveness of internal solid wall insulation in a variety of areas:

- Reducing energy bills through lower fuel consumption
- Decreasing CO_2 emissions, as a result of minimised fuel consumption
- Controlling internal ambient temperatures
- Reducing energy waste through heat leakage.

The effectiveness of internal wall insulation, as a way to address the problem of Britain's un-insulated, solid wall housing stock – approximately 7.5 million homes.

The house

This particular property is a post-1900, three storey, mid-terrace house with solid, natural stone walls. The home has three bedrooms and two bathrooms, as well as a kitchen-diner, living room, study and a utility room. Double glazing is installed throughout and a single storey extension has recently been constructed at the rear of the house.

Because the home has 'conservation status', and was constructed of natural stone, external wall insulation (EWI) was not considered suitable for the property and, as such, IWI was decided on as the most appropriate and effective form of insulation by the owners and architects.

Action taken

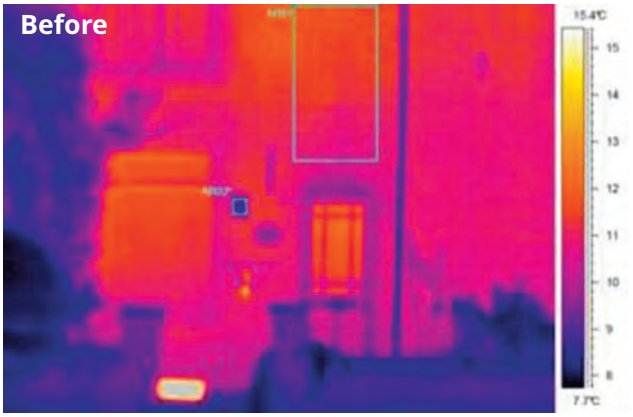
The Bolton house was fitted with Isover's Optima IWI system, an insulation solution specifically designed to improve the thermal performance of solid or 'hard to treat' walls.

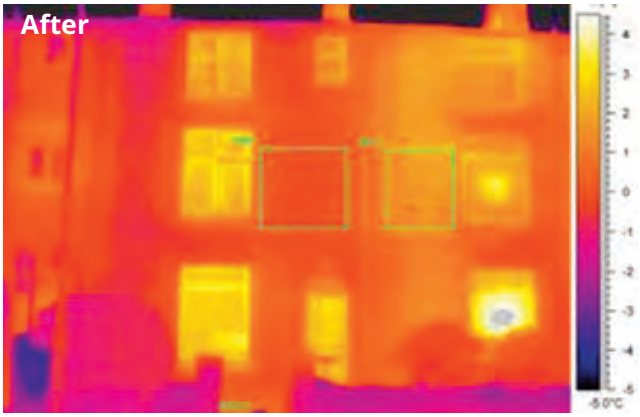
System components were assembled in-line with installation guidelines, insulating all walls within the property, with the exception of the extension (which had been built to more recent Building Regulations with an insulated cavity wall), and the two bathrooms. In addition, Isover's Protect external wall treatment was applied to the external surface of the masonry wall to control moisture ingress.

Measurement, assessment and results

To accurately assess the effectiveness of Optima IWI, a variety of data from the insulated property was collected and

Heat leakage





analysed. This included thermal imaging, measurement of the U-value and air permeability. Temperature and humidity sensors were also installed to monitor environmental conditions and smart meters were fitted to track gas consumption.

Heat leakage

Thermal imaging demonstrated a clear improvement in heat leakage from the house, from pre- to post-insulation, as the internal insulation had an effect on reducing internal heat from escaping through the walls. The post-insulation image clearly shows the difference between the insulated and un-insulated property (to the right), showing an approximate two degree difference in wall temperature.

Comparison of energy performance

Table 7 also shows the recorded gas consumption before and after Isover's Optima IWI system was installed. As external temperature has a large impact on the amount of gas used to heat the house, data collected from sensors measuring environmental conditions was taken into consideration when analysing the figures. Comparing energy consumption data collected pre and post-insulation, the trial found that yearly gas use decreased from 26685 kWh to 19748 kWh, a significant 26 per cent reduction. This equates to a 1271 kg reduction in CO_2 emissions from the property and a saving for the homeowner of £312 over the course of a year.

Condensation

Significant investment was made during the project to analyse condensation. Measurements of wall surface temperature were taken in all EST trial houses, along with humidity and ambient temperature and this information was used to calculate the dew point of the wall surface and identify any risk of condensation. Condensation could have occurred before insulation was installed due to cold external walls, but was unlikely to occur post-insulation, unless poor ventilation and humidity had allowed it to build up. In this property, no risk of condensation was identified after Optima IWI, Vario membrane system and Isover Protect had been installed.

Comparison B: Bedroom interior, second floor

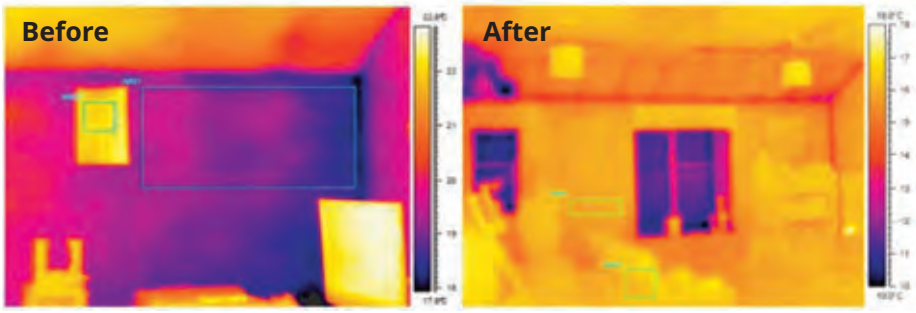


Table 7 – Gas use calculations

	Recorded Gas Consumption (kWh)	Monitoring period (weeks)	DDH[12] Total	Normalised total gas consumption per year (kWh)
Pre	19695	20	1519	26685
Post	5527	9	576	19748
			Reduction	6937
			Percentage	26.0%

Average DDH/Year 2058 degC/degK

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Energy efficiency and housing: what next for Local Authorities?

Ian Hutchcroft, Head of Local Delivery at the Energy Saving Trust explains how local authorities can retrofit for energy efficiency and deliver benefits for carbon reduction, health, jobs and growth...

There is no doubt that the drivers for local authority action on housing energy efficiency are strong, and getting stronger.

With 22,500 excess winter deaths per year and many more avoidable winter hospitalisations, the economic and social costs of cold homes are significant and on the increase. One in five of us live in fuel poverty, and burdened with the oldest, least efficient housing stock in Europe, the single greatest driver for local authority action is health improvement.

"To develop and deliver effective strategies for housing, health, economy and carbon, councils need to know which measures are required in which houses, the costs, impacts on bills and carbon, funding available and the investment business case."

There is a strong economic case to make for retrofitting because it creates real, local jobs and growth. A striking example of this is Energy Saving Trust's 'Ready for Retrofit' programme in the South West which created 274 additional jobs and £50m for the economy, as well as many warmer and easier to heat homes. This is work that is done locally by skilled local businesses and there is a lot of work to be done. Indeed, the programme has just begun a new energy efficiency retrofit initiative in Devon, with a £725k investment.

But underpinning all of this there is a legally binding commitment to meet the targets in the Climate Change Act: a zero carbon housing stock by 2050, now less than 35 years away. Achieving this will overcome many of the health problems associated with cold homes and create thousands of long term, skilled jobs.

Ward	Solid Walls	
Bickenhill	1137	22%
Blythe	550	10%
Castle Bromwich	936	20%
Chelmsley Wood	420	8%
Dorridge and Hockley Heath	668	15%
Elmdon	825	16%
Kingshurst and Fordbridge	432	8%
Knowle	740	18%
Lyndon	2276	42%
Meriden	986	21%
Olton	1385	27%
Shirley East	1484	33%
Shirley South	1100	22%
Shirley West	1664	33%
Silhill	1697	34%
Smith's Wood	412	8%
St Alphege	844	17%
Solihull Total	**17556**	**21%**

Data analysis can identify areas to target eg in Solihull

With the role of local authorities increasing as we approach the General Election, delivery has so far been difficult. Budget cuts and staff resource constraints coupled with the ever changing policy and funding environment has not helped. However, there are examples of local authorities taking a lead, forging ahead and delivering results for their communities.

Home analytics data can be used to produce address level spatial analysis

Bristol is this year's European Green Capital, an accolade that is underpinned by an ambitious housing retrofit programme backed by the Mayor. Further south, the Plymouth Energy Community has a large social housing retrofit programme, with Green Deal Communities funding filling in the privately owned gaps, and a Community PV programme funding provision of advice to householders through a new cooperative. Just next door in rural Devon, 10 local authorities are working on the Cosy Devon programme.

In the capital, the Re:new programme has moved from doorstep advice and referrals to insulation schemes, into a European Investment Bank funded programme to help landlords invest hundreds of millions of pounds in retrofitting their stock. The UK's other major cities are all active and some, Leeds and Newcastle, are working with their neighbours in large regional programmes.

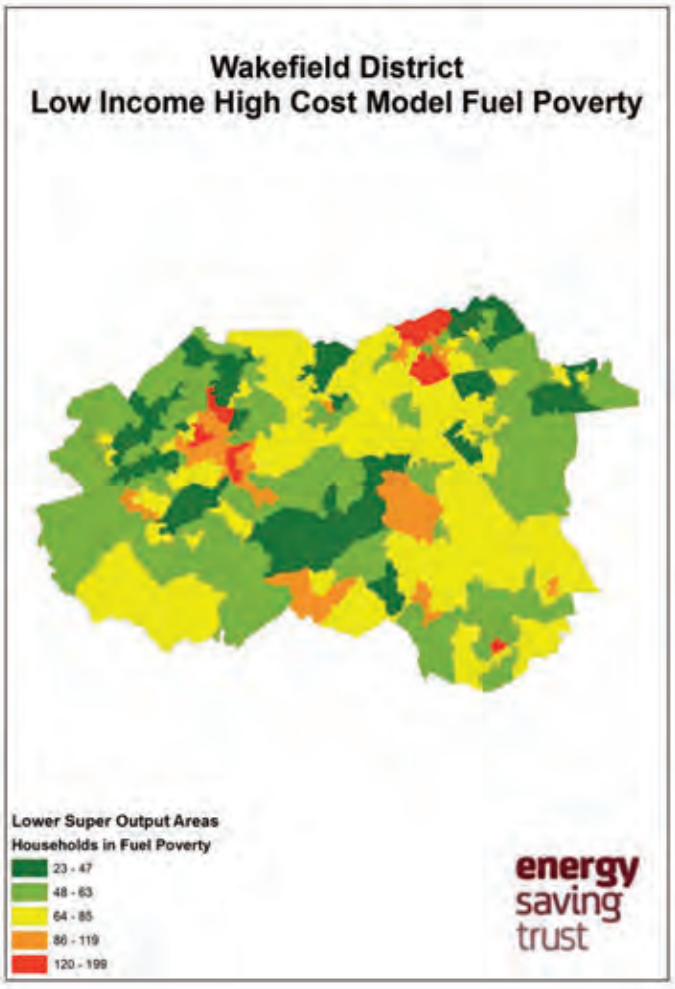
So, what next for local authorities?

1. The big challenge needs big data.

To develop and deliver effective strategies for housing, health, economy and carbon, councils need to know which measures are required in which houses, the costs, impacts on bills and carbon, funding available and the investment business case. We have been collecting housing data for over 20 years and developing our Home Analytics database for all of the 27 million addresses in Great Britain, and this is available to every local authority. Our recent research has shown that access to clear, comprehensive data and analysis is one of council officer's biggest barriers. Many officers joined our recent webinar where we showed how to access and analyse the many sources of available data.

2. Do everything, in the same place, at the same time, for a consistent period of time.

Many local projects have suffered from being just a partial solution, looking at one part of the problem: grants, supply chain or community engagement, and often constrained by very tight spending and delivery timescales. And no sooner have they got up a head of steam, then their funding runs out. Our Ready for Retrofit programme, referred to earlier, has shown the benefits of working on demand stimulation through grant aid, together with supply chain development and local business support, market development by supporting community groups and Open Homes events, and helping local authorities access longer term finance. Doing all of those things in the same place over 3 years has delivered real results and we



Targeting fuel poverty

believe should be the template for local programmes in the future.

3. We need catalysts to increase scale and reduce costs.

Could social landlords play a greater role in making trusted, well managed, good value retrofit schemes available to privately owned homes in their areas as well? Could the next big idea in housing retrofit have been developed in the Netherlands, called Energiesprong (Energy Leap)? This net zero energy retrofit is built off-site to reduce costs and time on-site to 10 days, with guaranteed energy performance and maintenance, and funded by replacing energy bills with monthly service charges. Dutch housing associations have now come together and let a contract to Energiesprong to retrofit 100,000 properties, which enables the supply chain to move from prototypes to industrialised methods and significantly reduce costs.

Local authorities increasingly recognise that focusing on improving housing energy efficiency is one of the most effective ways to improve health prospects, create local jobs, reduce energy bills and cut carbon emissions. There will be many willing partners for the next government to work with. ■

energy® saving trust

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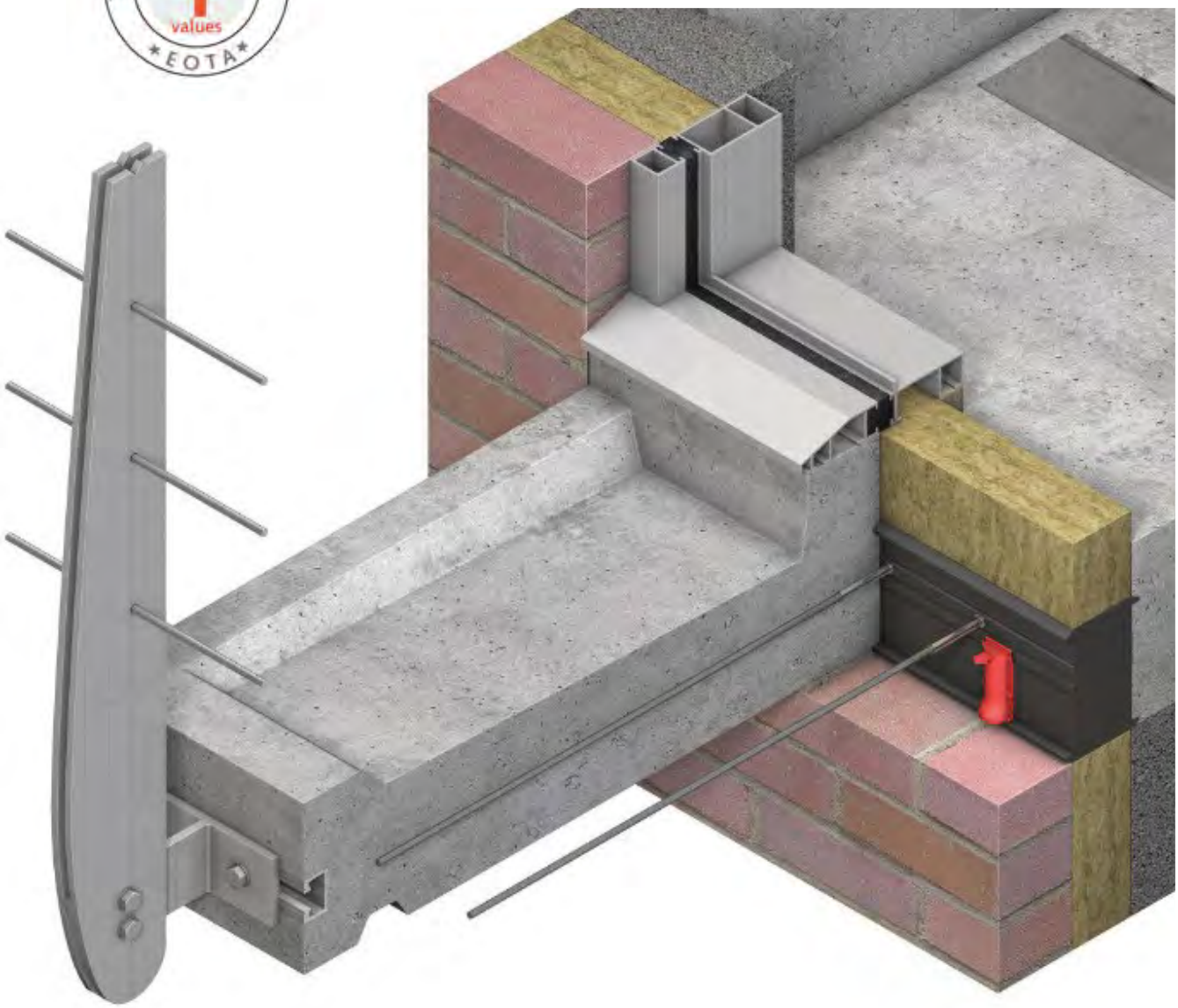


Halfen HIT insulated balcony connections with ETA approval and CE marking

Certified

European Technical Approval ETA-13/0546

HALFEN

YOUR BEST CONNECTIONS

www.halfen.co.uk

Thermal Performance

Halfen outline the innovations available to mitigate cold bridging and improve thermal performance...

With the ever increasing need to improve the thermal performance of our buildings, designers and specifiers are always looking for new methods and products to achieve these aims. Cold bridging at balcony and walkway connections is potentially a significant contributor to heat loss from a building. The latest generation of the Halfen HIT insulated structural connectors provide an effective solution to these cold bridging problems. However besides these very important thermal issues there are a number of other considerations that should be taken into account when selecting a thermal connection product.

ETA & CE Marking

Under the Construction Products Regulation (CPR), it is now mandatory for manufacturers to apply CE marking to any of their products covered by a harmonised European standard (hEN) or a European Technical Assessment (ETA). Halfen's HIT thermal connections have undergone an extensive third party review and approval process together with a rigorous testing regime to enable the HIT-HP & HIT-SP products to gain its European Technical Approval (ETA-13/0546). This approval uniquely allows Halfen to CE mark the HIT thermal connections giving customers added confidence to specify and use the Halfen HIT system.

CE
European Technical Approval
ETA-13/0546
0432-CPD-11-9188-14 (A)
0432-CPD-11-9248-12 (P)

Robust and easy to install

With many thermal units, one of the key problems once they have arrived on site, is that they can be easily damaged during normal handling, transporting or installation of the product. Some units needed to be very carefully stored to ensure they did not degrade when exposed to the elements.

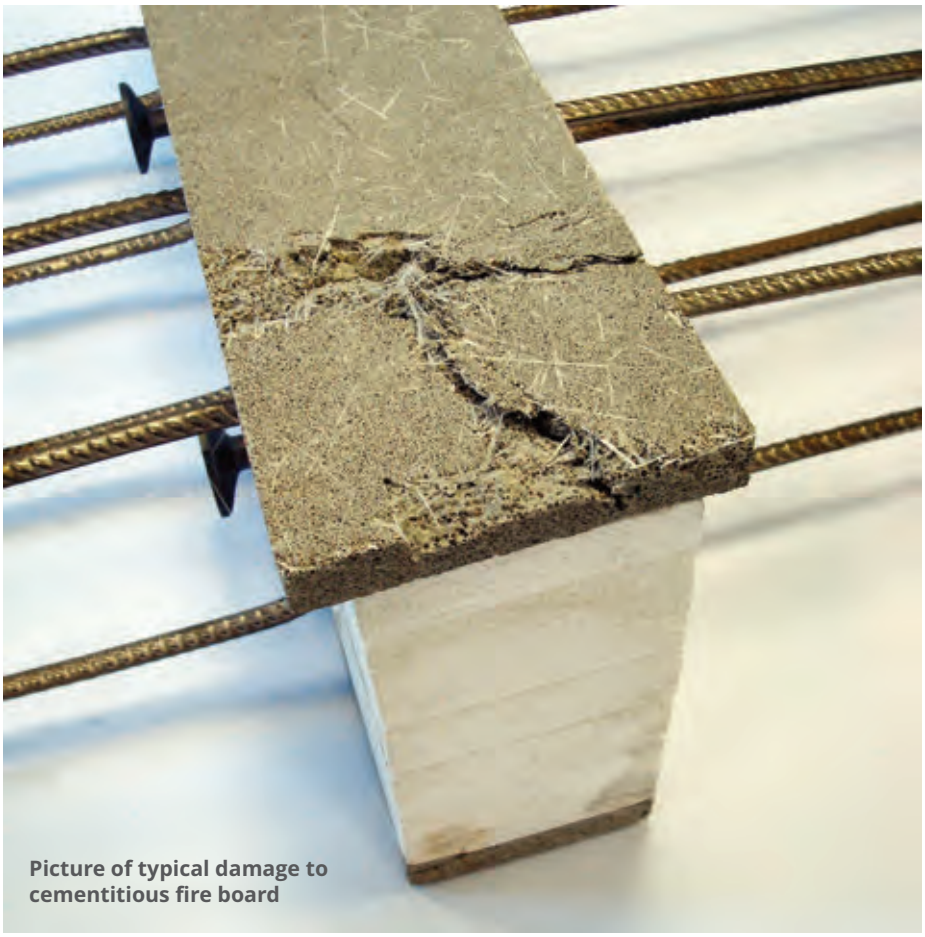
The latest generation of Halfen HIT HP and SP thermal connections sought to address this reoccurring problem on site with a number of key innovations. The new units now come encased in a hardened plastic shell which both firmly holds the essential HIT components in place whist providing a robust and easy to handle unit. This in turn means that the HIT units are easy to place and install, something which is made even easier by the fact that the new generation of HIT HP and SP units have eliminated the protruding compression studs and shear bars.

Fire protection

The shell also contains the high quality fire protection material which enables every HIT HP and SP unit to attain F120 fire protection as standard. This is something which is often only offered as an optional extra at additional cost.

The standard fully encased fire protection is a major improvement on previous products because of the way in which this is provided in traditional systems. The old method of fire protection normally involved the provision of cementitous fire board top and bottom of the insulation. The main problem with this form of protection is that it can be easily dislodged, cracked or crushed during normal site operations. To ensure that fire protection is maintained, all the damage needs to be repaired or the fireboard replaced. Whilst it is possible to provide replacement fire board it is difficult to glue this into place on site.

It is important to remember that the cementitious fire board also needs to be provided at the sides of the thermal units to ensure complete protection of the structural components. This is something that is often missed and yet could cause major structural problems in the event of a fire.



Picture of typical damage to cementitious fire board

Finally the addition of cementitous fire board to the traditional insulation units will reduce the thermal performance particularly if these units are attempting to achieve a two hour fire rating. Again this is something that can be overlooked however it is not something you would need to worry about when using the HIT HP units as the fire protection is standard and fully included within the thermal performance figures of the unit.

Passive House

The unique innovations implemented in the new second generation of HIT products have resulted in some substantial improvements in the thermal performance of the system. The utilization of the CSB components has enabled Halfen to eliminate the thermally inefficient steel compression pads and shear bars penetrating through the insulation. This has resulted in Halfen achieving Passive House approval for its HIT products, including some of the standard 80mm thick HIT-HP units.

Psi values

When HIT products were first introduced it was often sufficient that the designer was doing something to counter act cold bridging. With the ever increasing thermal requirements from part L, designers are having to look much more closely at the thermal performance of products they select and use. Even today though, designers should be cautious when reviewing thermal values as some published figures are not appropriate for linear connections.

With the Halfen HIT system, the quoted Psi values are both internationally recognized as the correct thermal values for linear thermal breaks and are approved by official third party organizations.

To conclude, thermal performance is one of the key factors when selecting products for potential cold bridging connections therefore care needs to be taken when reviewing thermal values. There are also other issues such as fire protection, robustness and easy of installation that should also be considered and third party approvals such as ETA, CE marking and Passive House can give the customer, specifier and end user confidence in the product selected.

Passive House Institute

Technical approved Ψ values EOTA

PHI Low Energy Component

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Bridging the performance gap

Buildings rarely perform as well as their designers predicted – energy consumption can be as much as double what was expected, so annual energy costs can also be doubled. This difference has become known as the performance gap, as explained by Andy Lewry of the BRE...

Operators of commercial and public buildings need clear and realistic guidance on targeting energy running costs for their properties and on the potential savings available. At their disposal are two seemingly irreconcilable indicators of performance: energy performance certificates (EPCs) provide a theoretical assessment of their asset but under standardised 'driving conditions', while operational ratings based on energy bills give no indication of how much lower those bills could be. The operational rating is nearly always higher due to non-standard hours of operation, occupancy patterns and unregulated loads, such as IT and office equipment.

To truly understand how a building uses energy it is necessary to know something about the building itself and about how it is used; this requires both an asset rating and an operational energy rating.

"The scenario where a difference is found between the EPC and DEC – is the so called "PERFORMANCE GAP". This is where the real operation of the building is different to that predicted by design due to the conditions of use being totally different from those standard assumptions."

What do they do?

The asset rating is intended to inform people on first occupancy, i.e. at the point of construction, sale or rent, in order to help purchasers or tenants in selecting the right building. At this point in time, any previous metered information is either unavailable or not very helpful as the previous occupants' operation of the building, unregulated energy use, etc., could be quite different to that of the new occupants.

An operational rating gives information on actual energy usage and example is the Display Energy Certificate (DEC). Public buildings in the UK have to display a DEC; there is pressure to extend DECs into the commercial sector – initially on a voluntary basis.

What are the differences?

The two ratings show different aspects of a building's total energy performance. A DEC, or operational rating, records the actual energy usage from a building over the course of a year, and benchmarks them against buildings of similar use. An EPC, or asset rating, models the theoretical, as designed, energy efficiency of a particular building, based on the performance potential of the building itself (the fabric) and its services (such as heating, ventilation and lighting).

The building quality (provided by the EPC) has a large impact on the total energy usage (from the DEC), but does not explain them all. Other factors such as unregulated loads or building user behaviour also use energy, which is reflected in the DEC. However, in order to understand what is driving these emissions, the EPC plays a critical role in separating the influence of building quality from other influences such as end user behaviours.

To truly understand the energy performance and the factors driving consumption within a building, you need both ratings and the ability to tailor them.

The scenario where a difference is found between the EPC and DEC – is the so called "PERFORMANCE GAP". This is where the real operation of the building is different to that predicted by design due to the conditions of use being totally different from those standard assumptions.

Resolving the performance gap

The poor performance of buildings in use compared with their design predictions has been much discussed and various approaches to resolving the problem have been suggested, including:

- Whole building energy benchmarking – modelling the energy use at the design stage and comparing this directly with the in-use performance. This requires realistic whole building energy calculations at the design stage, which has been infrequent and, as stated earlier, is not straightforward as it depends so much on occupancy. In common with DECs, it also requires benchmarks which are robust and applicable to specific building types. Such benchmarks were researched and produced by the Energy Efficiency Best Practice Programme in the 1990s but have not been maintained.

- More complex modelling such as dynamic simulation models. The extra detail may provide more accuracy in the comparison process, but it does not necessarily resolve the underlying problems: modelling all building energy uses and addressing actual occupancy and services operation.

- **Practical analysis of building energy** as the sum of all end uses such as lighting, ventilation and small power at the design stage and in use. TM54 Evaluating operational energy use of buildings at the design stage, published by the Chartered Institute of Building Services Engineers (CIBSE), covers the analysis of the energy use of systems, so that this can be done at the design stage with the likely building occupancy and use, ready for later assessment when in use. This provides one process for resolving the problems identified above.

- **EPCs/DECs** – use existing data and tools – can be used as a first cut to target issues or prioritise a portfolio of buildings. We will now consider how this can be achieved.

Using existing data and tools

One of the software tools used to create a Non Domestic EPC (NDEPC) is the interface for Simplified Building Energy Model (iSBEM). http://www.ncm.bre.co.uk/.

The Operational Rating Calculation (ORCalc) is the software used to calculate the operational rating of a building from annual utility consumption, and to produce the DEC and an advisory report providing advice on energy efficiency measures. https://www.gov.uk/government/publications/display-energy-certificate-software-specification .

A possible solution

The tool supporting the UK Green Deal is the non-domestic GD tool based on iSBEM and has the ability to link NDEPCs and DECs. https://www.ncm-sbem.org.uk/.

The Green Deal tool brings the two assessments together by unlocking the "standard driving conditions" and allowing assessors to tailor the model to real life occupancy. Actual data on how the building is being run and used can now be entered. This allows the asset performance to be compared to the performance in use.

The tool also identifies potential operational measures and quantifies savings from improved management, to the benefit of owners and occupiers. In addition, scenarios for asset improvement can be input and the tool calculates the cost/benefits. As a result this tool can be used to provide data to underpin business cases. ■

Dr Andy Lewry is a principal consultant at the Building Research Establishment and author of its new guide, "Bridging the performance gap" – Understanding predicted and actual building operational energy" on which this article is based. The full publication is available from http://www.brebookshop.com/details.jsp?id=327495 quoting reference "PerfGap" for a 20% discount. He will also be speaking on these topics at the Eco Technology Show in Brighton on 11th & 12th June 2015. More information on this event covering solutions for sustainable energy, build, transport, innovation and resource efficiency can be found here www.ecotechnologyshow.co.uk .

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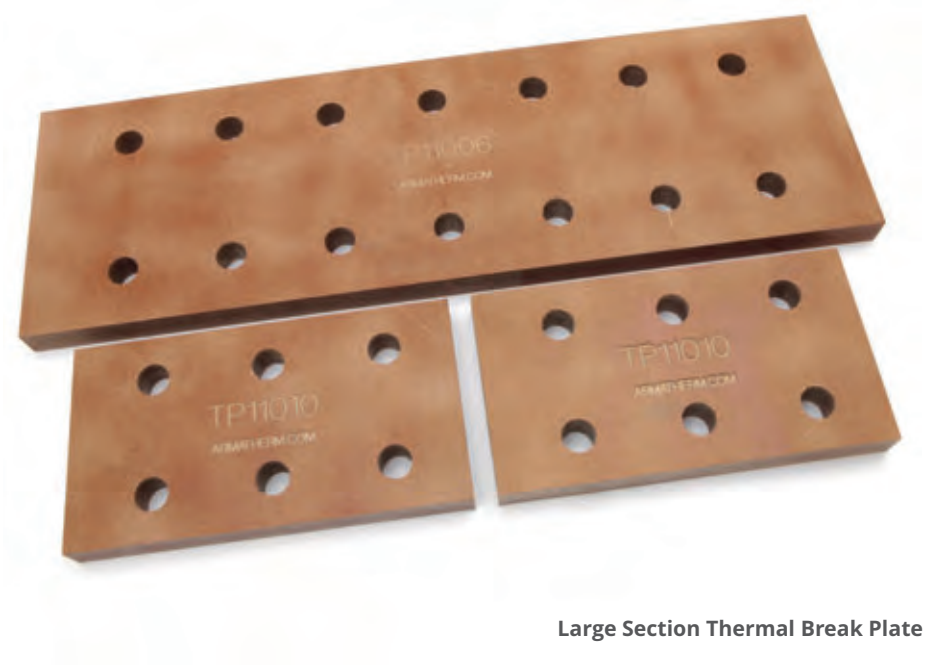
ARMATHERM™ Bolt-through structural thermal breaks

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.

Help in designing the thermal connection is available at sales@armadillonv.com

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ARMATHERM™ THERMAL BREAK CONNECTION PLATES

Independently Accredited by the Steel Construction Institute, (SCI) Armatherm™ Thermal break pads have been employed for over a decade throughout Europe and more recently in to the USA. With increased awareness for energy efficiency in buildings more projects are demanding they be included within the design. It is now apparent that in addition to large penetrations through the insulation envelope, masonry supports, lintels and cladding details also be considered.

Armadillo NV, offer a complete thermal modelling design service to fully evaluate the building wall build up, not just the large section steel penetrations. Contact us today with details of your project.

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- Cut to size and pre drilled for easy installation.
- Design and Supply of steel fixing brackets.
- High friction coating for high shear slip critical applications.
- Grade 500 for Column Base Isolation.
- Masonry Support Isolation.

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The INCA Manifesto – A future for EWI

INCA has published a manifesto ahead of the General Election calling on any future government to set out a clear role for EWI as part of a coherent energy efficiency strategy. Here, they deliver their message...

INCA (Insulated Render and Cladding Association) is the recognised trade association for the external wall insulation (EWI) industry, representing the major system designers, a nationwide network of specialist installers and the key component suppliers. With 100 members, INCA represents over 80% of the EWI industry by volume and is at the forefront of transforming the energy efficiency of homes and businesses in the UK.

The recently published INCA manifesto builds on the findings of the report from the Institute of Public Policy Research (IPPR), Up Against the (Solid) Wall: What Changes to the ECO Mean for Energy Efficiency Policy, which demonstrates the substantial benefits of solid wall insulation for the UK, including the employment, health and social impacts on residents. INCA is calling for support for EWI to improve energy efficiency, cut fuel bills and lift households out of poverty and the manifesto makes the case for a long-term energy efficiency strategy with sustainable funding initiatives.

INCA Chairman Pádraig Barry said:

"There is still a huge challenge to meet with the latest government figures showing that only 3% of the 8 million solid wall properties in Britain have received insulation. At the current installation rate it will take around 150 years to insulate all solid wall homes, which undermines the important role upgrading our existing housing stock has on lowering carbon emissions and reducing fuel poverty. The General Election offers a real opportunity to make the industry's voice heard and bring about a step change in the approach from Government."

SWI or EWI?

Solid wall insulation (SWI) includes both external wall insulation (EWI) and internal wall insulation (IWI). It involves the application of an insulation layer to the wall of a building in order to improve the building's thermal efficiency. As solid wall properties have no cavities to fill, SWI is the only option to upgrade their energy performance. For EWI, a choice of cladding covers the insulation layer and this can be finished in a variety of ways with a result that not only improves the thermal efficiency of the building but also enhances its appearance. It is estimated that EWI represents around 75% of SWI installations[1] and this rises to over 90% for Government-funded schemes[2].

Vision for the EWI Industry

There are more than 8 million households in Britain living in solid wall properties who are suffering from the highest energy bills, including almost half of the country's 'fuel poor'[3]. With solid wall properties typically leaking twice as much heat as those with cavity walls, there is a vital and central role for EWI in improving energy efficiency, cutting fuel bills and lifting households out of fuel poverty.

The economic case

INCA is calling on any future government to recognise the economic case for investment in EWI to reduce carbon emissions and fuel poverty, to create growth in the UK economy, and to support community regeneration as set out in the IPPR report.

- For every £1 spent by government on the installation of SWI, the Exchequer can recover up to 100% of its investment depending on the funding option chosen.

- The insulation of 100,000 solid walls every year, which was the original target until 2022 under the Energy Company Obligation (ECO), would directly and indirectly support up to 29,340 jobs.

- SWI provides a healthier living environment which reduces the burden on the NHS of typical lung and respiratory illnesses associated with living in poorly insulated properties.

- SWI also contributes to area regeneration by improving not only the appearance and value of individual properties but whole estates.

- As SWI is a labour intensive construction activity, it can create significant local training and job opportunities which can help to re-establish a sense of ownership and pride in areas that suffer from anti-social behaviour.

- In turn, this can help to connect communities, increase social capital and deliver a better quality of life for residents.

If value for money remains central to policy decisions, then any future government must recognise EWI as a cost effective solution.

An energy efficiency strategy

We are also calling on any future government to deliver a coherent energy efficiency strategy which supports 200,000 EWI installs by March 2017[4] and an ambitious upscale with interim targets in line with delivering the Committee on Climate Change's indicator of 3.5 million solid wall properties insulated by 2030.[5]

- The industry needs a clear commitment to energy efficiency which is long-term, joined up, and supported by investment.

- Energy efficiency is the only long-term solution to rising energy costs and should be a national infrastructure capital investment priority.

- As EWI maximises the efficiency of the building fabric to provide the greatest energy savings,

Continued on page 220...

Full fill for the perfect fit

How fully filling with 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, Knauf Insulation recommends fully filling cavity walls with their DriTherm Cavity Slab. This glass mineral wool insulation is currently in the process of obtaining LABC Registered Details certification[1] and carries the manufacturer's guarantee.

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.[2]

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 contains 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[3].

Undeniably, 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 Subject to final confirmation

2 Building Insulation Market,Construction Markets 2011

3 Consult NHBC Standards for guidance regarding wall construction in each exposure zone

KNAUF INSULATION
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Full-fill glass mineral wool solutions can be the most cost effective option for external walls in order to achieve compliance with Building Regulations.

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with ECOSE® TECHNOLOGY

Continued from page 217...

there should be a clear role identified for EWI within energy efficiency policy.

- By September 2014, almost 14 million cavity wall properties had received insulation (72%) compared to just over 270,000 solid wall properties (3%)[6].

- Any strategy needs to take into account solid wall properties as with no cavity to fill, the cheaper solution of cavity wall insulation is not an option.

- Upgrading these homes is a long term task and there must be a realistic upscale of EWI to make a meaningful start on addressing the eight million households that need EWI otherwise at the current installation rate it will take around 150 years to insulate all solid wall homes.[7]

If warm, healthy and energy efficient homes are a priority, then any future government must support the delivery of EWI on a large scale.

Consistent policies

A future government should also commit to consistent energy efficiency policies and targets that provide certainty and stability for the EWI industry in order for businesses to invest and plan for the future to the benefit of its clients.

- The industry up-scaled its workforce to meet the expected demand for insulation as a result of ECO; however, it is currently facing 20,000 job losses[8] as a result of policy change and a subsequent 75% reduction in the target for SWI.

- Inconsistent policy changes have created a damaging boom and bust cycle which is hugely detrimental to the industry and its clients.

- In the face of rising energy prices, the need for effective energy efficiency solutions is more significant than ever, yet it is difficult for businesses to invest or plan until there is a clear and consistent approach to energy efficiency policy.

- INCA members are at the forefront of industry developments and a more consistent approach would support and encourage innovation in systems, components and installation methods.

If significant improvements in energy efficiency is a goal, then any future government must help the

EWI industry to move forward with a far greater degree of certainty.

Funding Initiatives

INCA also believe that any future government should prioritise funding for sustainable initiatives developed with input from the industry.

- The Green Deal has failed to live up to expectations due to flawed planning, inefficient delivery of funding and poor implementation[9]; ECO targets for SWI have been cut by more than 75%; and there is ongoing uncertainty around the Green Deal Home Improvement Fund (GDHIF).
- Funding initiatives should be well designed and managed with input from the industry so that the industry can deliver energy efficiency improvements effectively and successfully.
- The benefits of installing EWI to homeowners are wide-ranging so funding initiatives should not undermine the value of EWI.
- If there is limited funding, this should be directed towards the fuel poor to support hard to treat measures.
- The stop-start nature of GDHIF is not only a setback for the industry but also for customers planning energy efficiency improvements and it is important that funding initiatives are sustainable in the long term.
- Industry engagement is key to developing funding initiatives that are appropriate, well-managed and sustainable and linked to wider sector policies and funding streams.
- Consideration should also be given to legislation and policy changes which could help to drive demand for EWI in the long term and provide a more sustainable position for the industry.

If public money is to be spent in a cost effective way, then any future government must focus on initiatives that support the EWI industry to meet the needs of its clients. ■

[1] An analysis of the market for external wall insulation, BDS Marketing Research, 2013.

[2] The Final Report of the Community Energy Savings Programme (CESP) 2009 – 2012 and Domestic Green Deal, Energy Company Obligation and Insulation Levels in Great Britain, Quarterly Report, December 2014.

[3] Fuel Poverty: changing the framework for measurement. Taking forward the recommendations from the Hills Review Department for Energy and Climate Change, 2012.

[4] INCA's response to 'The Future of ECO Consultation' called for an increase in the SWI minimum to 200,000 to March 2017.

[5] Energy Prices and Bills – impacts of meeting carbon budgets, Committee on Climate Change, December 2014.

[6] Domestic Green Deal, Energy Company Obligation and Insulation Levels in Great Britain, Quarterly Report, December 2014.

[7] Based on the current rate of installations set out in the Domestic Green Deal, Energy Company Obligation and Insulation Levels in Great Britain, Quarterly Report, December 2014.

[8] Up Against the (Solid) Wall: What Changes to the ECO Mean for Energy Efficiency Policy, IPPR, April 2014.

[9] The Green Deal: watching brief (part 2) – Energy and Climate Change, House of Commons Select Committee on Energy and Climate Change, September 2014.

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THERMAL

comfort

The fabric of thermal comfort.

When we typically spend 90% of our time indoors or in vehicles, it's fair to say that the buildings we live, work or play in every day, have a significant impact on our comfort, health and wellbeing.

Saint-Gobain, the world leader in the sustainable habitat and construction markets, has identified five key elements that contribute to our comfort levels indoors; visual, indoor air quality, audio, economic and thermal quality. Through years of research and development of these qualities, Saint-Gobain has created and recently launched My Comfort – the Multi-Comfort building concept which delivers benefits for the environment as well as occupant wellbeing.

Stacey Temprell, Residential Sector Director at Saint-Gobain, explains how thermal comfort in buildings effects health and wellbeing, the first article in a series examining each element of comfort.

Buildings should provide us with a comfortable, healthy habitat in which to be successful, efficient and safe as we set about our daily routines. Our newly launched multi-comfort building concept, My Comfort, combines the highest level of thermal performance with excellent acoustics, visual comfort, superb indoor air quality and outstanding energy efficiency.

My Comfort is designed to deliver comfort for everyone – in any type of building. Reduced energy usage and lower ongoing operational and maintenance costs mean you can actually save money, while enjoying all the additional long-term benefits of a future-proofed, sustainable building that gives you improved comfort, health and wellbeing.


WE TYPICALLY SPEND 90%
OF OUR TIME INDOORS
OR IN VEHICLES

All-round comfort, at any time

Within a building, various conditions are required to enable people to be comfortable, and to be able to efficiently and effectively perform tasks relevant to the space.

The four factors of thermal, audio, visual and indoor air comfort are powerful tools for designing happy, health, energy efficient buildings that deliver considerable economic benefit as well as all-round positive wellbeing effects for occupants.

According to the World Health Organisation (WHO), health is a state of complete physical, mental and social wellbeing, and recent research has shown that comfort levels in buildings can greatly increase health and productivity.

When designing and constructing buildings, a holistic approach is the best way to guarantee user comfort. The Multi-Comfort concept and 'My Comfort' starts from the central premise that all buildings can be designed to:

- Provide the highest levels of all-round comfort for their users;
- Genuinely and positively contribute to our health and wellbeing;
- Deliver the highest levels of efficiency for their owners – saving home owners and bill payers money on energy;
- Achieve the Passivhaus standard of energy efficiency.

We rarely consider whether a building really meets our needs, unless it suddenly isn't working for us or it makes us feel uncomfortable. How many of us have been in a restaurant where it's hard to hear our conversation? Or have been disrupted by the noise of neighbours either at home, or work? Or have been in a meeting room at work where the light quality is so poor it's hard to work? How many of us have been at our children's schools, and have thought how the rooms echo and the impact this could have on our children's learning? It's when we notice these sorts of things that we begin to question just how comfortable our buildings are.

Thermal Impact

Thermal comfort is what we experience when the body functions well, with a core temperature of around 37°C and skin temperature of 32–33°C. Thermal comfort achieves the right mixture of temperature, humidity, radiant temperature and ventilation, yet this can alter according to individual needs. Everyone has slightly different criteria for thermal comfort, so a building must allow you to adapt its conditions to your particular requirements and achieve this level in every room.

Multi-Comfort is based on Passivhaus design principles, with buildings using very little energy for heating and cooling. Like Passivhaus buildings, Multi-Comfort buildings achieve a 75% reduction in space heating requirements in comparison to current standard practice in new-build homes and provide the same level of thermal comfort.

Good insulation is crucial to maintaining consistent levels of thermal comfort, but ventilation is just as important, so that when any excess warm air leaves the building, it doesn't disrupt the consistent temperature. For example, glass in windows can either let sun radiation enter the building or block it depending on the season, and can also conserve or evacuate heat according to the kind of coating or film on the glass. Air-tightness membranes and vapour control membranes will allow internal humidity to exit the building while preventing the humidity from the outside entering, preserving the insulation.

There is overwhelming evidence to support the effects that improved thermal quality has on increasing comfort and wellbeing. Here are just a few of the studies' findings:

- Data indicates that around 90% of hospital wards are of a type that is prone to overheating, and the ability to control temperatures is often limited[1]. Seminal research in 2003 identified 15 studies linking improved ventilation with up to 11% gains in productivity, as a result of dedicated delivery of fresh air to the workstation and reduced levels of pollutants[2].
- Exposure to extreme heat is already a health issue. Currently, one-fifth of homes in England could experience overheating even in a cool summer3. Flats, which are generally more at risk of overheating than houses, now make up 40% of new dwellings compared to 15% in 1996. Urban greenspace, which helps to mitigate the urban heat island effect, has declined by 7% since 2001. In the UK, excess deaths from high temperatures are projected to triple to 7,000 per year on average by the 2050's as a result of climate change and a growing and ageing population.
- A cold home is bad for your health and increases the risks of cardiovascular, respiratory and rheumatoid diseases as well as worsening mental health. Cold homes are a significant contributor to the level of excess winter deaths in the UK every year. In 2009-10, there were an estimated 25,400 excess winter deaths, over 21% are attributable to the coldest quarter of homes[3]

There are many elements of comfort that must be considered to boost occupants' health and wellbeing. It is true that a little more financial investment in infrastructure is needed than current Building Regulation levels to achieve such effective housing, however investment will provide economic efficiencies for the long term. By providing buildings with the lowest primary energy demand, running costs can be greatly reduced, such as heating and water bills, alongside lower maintenance costs for the owner.

At Saint-Gobain, we believe that sustainable habitat is within our reach, and by providing sustainable products and solutions, this vision can be made a reality.

Read more about Multi-Comfort here: **www.multicomfort.co.uk**

To find our more about Saint-Gobain,
visit www.saint-gobain.co.uk.
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SAINT-GOBAIN
350

Investment in energy efficiency

Paul King, Chief Executive of the UK Green Building Council highlights why infrastructure investments for energy efficiency should be a priority for the government...

Blind spot. These are the words I used to describe government's thinking on the energy efficiency of UK homes and the various infrastructure projects it considers worthy of investment. When the National Infrastructure Plan (NIP) was published last December, it included a list of the Coalition's Top 40 priority infrastructure investments... energy efficiency didn't make the grade.

So what did make the list? It was a case of the usual suspects. Transport in the form of roads, railways and airports; flood defences; communications; water – areas that most of us would agree fit the classic definition of infrastructure – all got a look in. Energy generation also featured heavily, occupying 4 of the Top 40 places.

While all these areas rightly fit the bill for infrastructure investment, domestic energy efficiency should not have been ignored. Why?

Firstly there's the economic rationale, from both a consumer and wider economic perspective. Not only could a national programme of home energy efficiency deliver savings of up to £300 on the average annual household energy bill, it could also contribute to economic growth by creating thousands of jobs across the UK.

Then there's the environmental benefit. The scale of the retrofit challenge means we must retrofit one home every minute between now and 2050 if we are to meet our legally binding climate change targets of reducing emissions by 80% mid-way through the century. And our current efforts are falling short of this. Energy efficiency offers by far the most cost effective way of meeting our carbon targets and combating climate change.

Government's own analysis suggests that investment in energy efficiency could save the UK the equivalent of 22 power stations of energy by 2020 and around 9% of estimated total demand by 2030.

Cold homes are estimated to cost the NHS £1.36bn each year. Improving the energy efficiency of the coldest homes can also lift the vast majority of households out of fuel poverty and improve the health of residents.

Together with a coalition of 20 other partner organisations such as the Aldersgate Group, Green Alliance and WWF, we have campaigned for "a housing stock fit for the future". Others have joined this growing chorus such as Kingfisher's outgoing CEO Sir Ian Cheshire and the CBI from the business community, Labour's shadow energy team and even senior Government ministers such as Energy Secretary Ed Davey.

Overall, there's a compelling case for elevating the status of energy efficiency to an infrastructure priority and allocating significant capital investment on it. It was therefore frustrating that government effectively ignored the "significant opportunity" for greater energy efficiency which it identified within the NIP itself. A future government must think more broadly about what it considers infrastructure if it is to truly capitalise on the benefits energy efficiency can offer. ■

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At the leading edge of low energy design

A joint venture between a Norfolk local authority and property consultancy NPS Group is setting a strong benchmark for housing standards in the area by delivering high quality and energy efficient homes. Richard Gawthorpe, Director of Broadland Growth, explains more as the company's first development gets underway...

The Greater Norwich area has become a focus for major growth in homes, jobs and infrastructure, with Broadland District Council covering one of the key expansion zones.

The Council has joined forces with NPS Group to set up Broadland Growth Limited, a development company which will generate income to support council services, while NPS is utilising its Passivhaus expertise to raise the bar for sustainable house building in Norwich and beyond.

The first development will be at the leading edge of low energy design. A 14 home scheme delivered to meet Passivhaus standards on a site owned by the Council to the north of the city in Hellesdon.

Two 3 bedroom and six 4 bedroom detached houses will be sold on the open market, and four 2 bedroom and two 3 bedroom semi-detached houses will be offered on a shared equity basis with priority given to people with strong links to the area.

At 43%, the proportion of affordable housing on this site significantly exceeds the 30% policy requirement set out in the local growth strategy for the area.

Despite tasking the company with raising revenue which will be driven back into supporting public services, the Council has also recognised the wider social and environmental benefits building this way can bring.

Phil Kirby, Chief Executive of Broadland District Council recently commented: "Committing ourselves to the Passivhaus standard for these homes means we are ensuring they will operate economically and with low carbon output into the future".

"The key purposes in creating this company are to generate income to support council services in Broadland, build new homes that will be an exemplar for future development in the area and also to meet our commitment to environmental excellence. NPS was an ideal choice of partner because of the company's previous experience of the Passivhaus standard as well as shared public service values."

To date, NPS has delivered Passivhaus schemes in Great Yarmouth, Suffolk and Sussex, and has also designed the UK's first zero-carbon Passivhaus school, Montgomery Primary in Devon.

On this first project for Broadland Growth Limited, the NPS design team – which includes a Certified European Passivhaus

Designer – has gone to considerable lengths to ensure the development acknowledges the special nature of the site and delivers high levels of occupant comfort.

"Committing ourselves to the Passivhaus standard for these homes means we are ensuring they will operate economically and with low carbon output into the future".

The properties have been carefully grouped so the development sits comfortably in its woodland setting – an aspect which received positive feedback during the planning consultation process.

A material pallet of white render, black stained timber cladding and either slate or plain red roof tiles also reflects the materials used in the adjacent Carrowbreck House.

With the removal of trees kept to a minimum, shading was carefully analysed and subsequently significantly influenced the design. Every home has been positioned so as not to experience excessive tree shadow while the estate road has been deliberately positioned to the east of the main tree belt where the tree shadows have the biggest impact.

The positioning and orientation of the homes maximises the access to solar gain in winter and prevents over heating in summer, with louvred timber panels reoccurring across the design to provide solar shading and privacy screening.

The homes will achieve a thermal bridge and draught free building envelope which exceeds building regulations requirements for airtightness five times over. Fresh filtered air will be provided to the homes 24 hours a day, utilising a heat recovery system capable of achieving over 90% efficiencies, and an equivalent power requirement of 20p per day or the same as a low energy light bulb.

As well as being put forward for Passivhaus certification, all homes will also be Level 1 compliant with the National Housing Standards Review.

This high quality and ultra-low energy approach to house building will continue, with a number of exciting new developments in the pipeline.

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The NIA insulation service

The National Insulation Association (NIA) announces the introduction of a new service for Local Authorities and Housing Associations looking for insulation companies to work on their projects...

With the cuts to the Energy Company Obligation (ECO) announced by government last year, an increasing number of Local Authorities and Housing Associations are now unable to secure ECO funding for insulation programmes and are therefore funding these from their own budgets. As a result, the NIA is increasingly being contacted by them asking for help in finding local installers to carry out work on their behalf.

Neil Marshall, Chief Executive of the NIA commented: "Local Authorities and Housing Associations can provide us with the details of their projects and we will then issue expressions of interest and tender requests on their behalf to our members through our electronic communication system. This provides the benefit of avoiding the need to contact lots of different companies and is immediate.

"The NIA is the lead trade body for insulation measures in the UK and our members can provide multi measure solutions. In addition, our members are required to meet our robust membership criteria and adhere to our strict code of professional practice meaning our members provide additional reassurance and peace of mind."

Insulation for solid walls comprises of either Internal Wall Insulation (IWI), External Wall Insulation (EWI), or a combination of the two known as Hybrid Wall Insulation (HWI), and any option will greatly increase comfort, while also reducing energy bills by up to £455 per year and the associated environmental impact.

The Solutions

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

Laminated insulated plasterboard which normally replaces existing lath and plaster is fixed directly to the existing brick. Depending on the system, thermal boards can either be screwed or glued using a dry wall adhesive directly onto the brick work just like standard plaster board. It has the advantage that it can be installed room by room with the tenants in situ. It increases internal surface temperature within a room and also improves response to heating input when heated intermittently. It has the lowest thermal conductivity available and allows installation on damp surfaces without drying periods because it's hydrophobic.

EWI comprises of an insulation layer fixed to the existing outside wall, with a protective render or decorative finish. Dry cladding offers a wide range of finishes such as timber panels, stone or clay tiles, brick slips (brick effect finish) or aluminium panels. EWI increases the thermal quality of the building – particularly relevant when refurbishing non-traditional housing. It also overcomes moisture and condensation issues, protects the existing building envelope can reduce heating bills by up to 25% as well as greatly improve the appearance of the building.

EWI is a tried and tested method of upgrading the thermal performance and external appearance of existing properties which are literally transformed into warm, energy efficient and attractive homes and buildings. Improving appearance is of particular significance to many local authorities targeting housing

CASE STUDY – SHERWOOD COURT, NOTTINGHAM

Many Local Authorities throughout the UK are now choosing EWI insulation as an energy efficient measure to upgrade their existing housing stock in order to meet the government's Decent Homes Standard.

Sherwood Court, a two storey sheltered housing complex in Kirby-in-Ashfield, has recently benefitted from government funding, allowing clients Ashfield Homes to begin the major refurbishment on reducing unnecessary heat loss and CO_2 emissions.

A Weatherby Epsicon EWI system was chosen as a cost effective solution to a project that would reduce energy usage and carbon emissions whilst protecting and prolonging the external fabric of the building.

The system build up consisted of a layer of 60mm Phenolic Insulation that was mechanically fixed to the substrate of the building. Following the application of a strengthening scrim mesh, embedded into scrim adhesive, a layer of White Dashing Mortar was applied at a thickness of 8-10mm. Whilst still wet, two aggregates chosen and thrown into the mortar, ensuring an even distribution of chippings. The combination of the two aggregates gave a contrasting finish which dramatically uplifted the worn out exterior of the two storey building.

Originally built in 1972, Sherwood Court was failing to meet current building regulations, but with the application of EWI it upgraded the building from starting u-values of 2.1W/m2K to an impressive 0.29W/m2K.

projects in poorer areas. Adding EWI on a whole street basis will raise residents' morale and give a sense a pride in their community.

There are many benefits of EWI including the fact that no living space is lost. There is minimum disruption for the residents as the work can be carried out while they are in their homes and there is no risk of condensation within the property as it is moved to the outside of the system that is being put in place. Also there is minimal maintenance once installed.

Any organisation interested in the new service please email or telephone Bev Hodson at the NIA bev.hodson@nia-uk.org or call 01525 383313

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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).

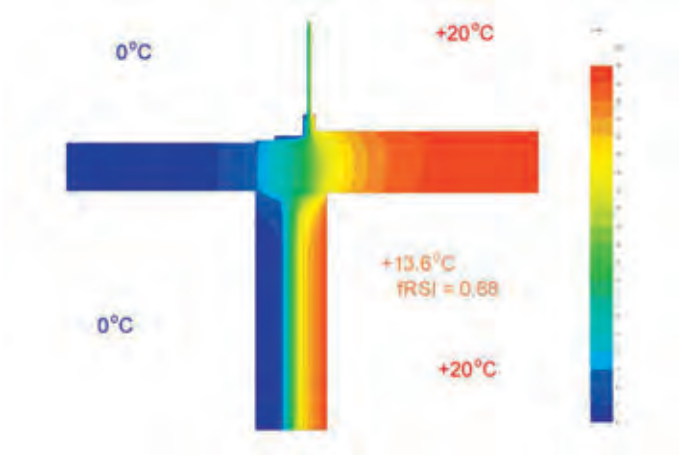

Fig 8. Direct connection (Case 1). This detail *DOES NOT* conform with UK Building Regulations Part L requirements for minimum temperature factor in dwellings (f_{RSi} = 0.75)

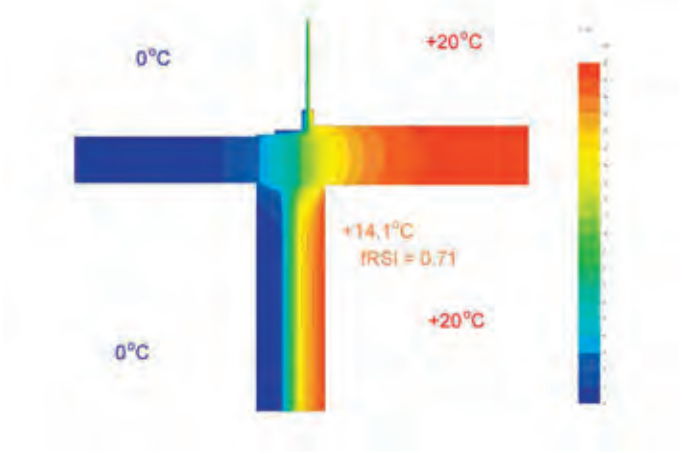

Fig 10. 20mm pad connection (Case 3). This detail *DOES NOT* conform with UK Building Regulations Part L requirements for minimum temperature factor in dwellings (f_{RSi} = 0.75)

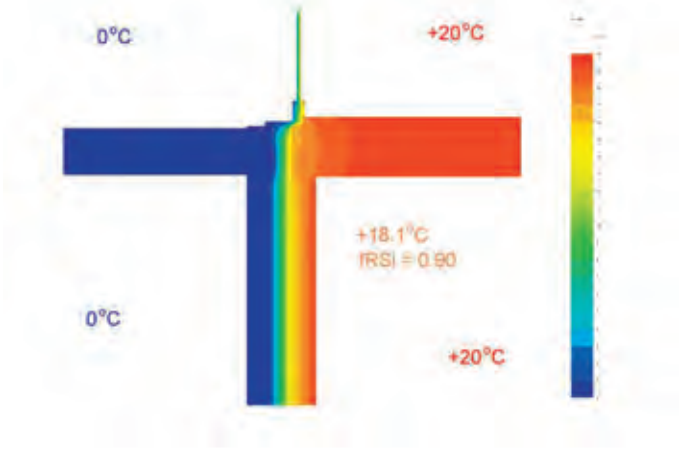

Fig 11. KS14 H200 connection (Case 4) where this detail DOES CONFORM with UK Building Regulations Part L requirements for minimum temperature factor in dwellings (f_{RSi} = 0.75)

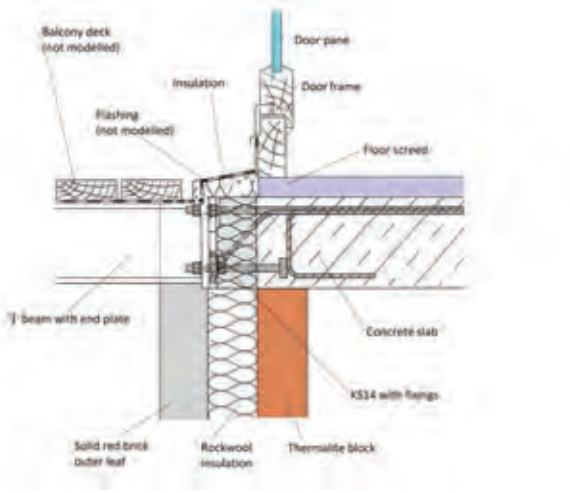

Fig 2. Schöck KS14 unit used with masonry wall and concrete slab

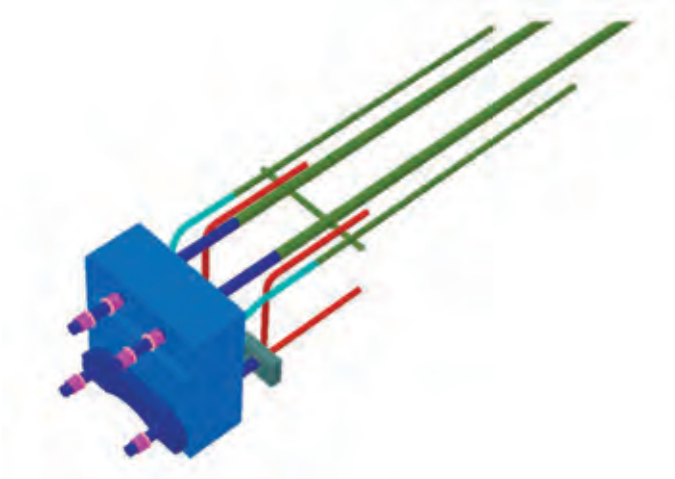

Fig 3. The KS14 unit SOLIDO model (surrounding construction omitted for clarity)

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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Scotland gets tough on carbon

Scotland will soon implement Section 6 2015 of the building standards. Tony Millichap, Technical Manager at Kingspan Insulation Ltd outlines how the additional carbon reductions for new buildings provide a strong base for a near zero carbon construction in the future...

The construction industry in Scotland faces a whole new challenge on the 1st of October this year as the Scottish Government implements Section 6 (energy) 2015 of the Building Standards. The new Technical Handbooks introduce some key changes from the 2011 Standards, including a 21% aggregate reduction in carbon emissions from new domestic properties and a 43% aggregate reduction for new non-domestic.

New Dwellings

As with the 2013 Domestic Technical Handbook, there are two routes to compliance for new domestic buildings. A simplified approach requires dwellings to meet all of the criteria set out within a space heating fuel table, which includes tightened building fabric requirements shown in Figure 1. However, only limited deviations are allowed from the specification and costly renewables may be required dependent upon the main heating fuel.

The whole dwelling approach provides greater flexibility. A Target Emission Rate (TER) is calculated based on a 'notional dwelling' of the same size and shape as the actual building. A Dwelling Emission Rate (DER) is then calculated for the property and must not exceed the TER. Both of these calculations will be carried out using SAP 2012. To ensure that a high level of thermal performance is achieved as part of any dwelling, the area weighted maximum U-values have also been lowered (Figure 2).

By attaining the best possible U-values it is possible to limit the use of renewables and relax some of the more stringent notional dwelling requirements. Kingspan Insulation has analysed the options and provided recommended building fabric U-values in Figure 2. These will be a little more than is required for some buildings and a little less for others, but provide a good starting point for the majority of applications.

Refurbished Dwellings

The most notable change for retrofit projects centres on improvements in the maximum U-values for dwelling extensions. As shown in Figure 3,

	Section 6 2015	Section 6 2013
Walls (W/m²K)	0.17	0.19
Floors (W/m²K)	0.15	0.15
Roof (W/m²K)	0.11	0.13

Figure 1: Space heating fuel table fabric requirements in Section 6 2015 and 2013

	Area weighted average limit	Recommended Starting Point U-values
Walls (W/m²K)	0.22	0.16
Floors (W/m²K)	0.18	0.11
Roof (W/m²K)	0.15	0.11

Figure 2: Maximum U-values for new domestic insulation envelopes in Section 6 2015

	Area Weighted Average limit	
	A: Extensions where existing walls and roof are worse than 0.7 and 0.25 W/m²K respectively.	**B: Other extensions; upgraded existing elements and non-exempt conservatories.**
Walls (W/m²K)	0.17	0.22
Floors (W/m²K)	0.15	0.18
Pitched roof (insulation between ceiling ties or collars) (W/m²K)	0.11	0.15
Flat or Pitched Roof (Insulation between the rafters) (W/m²K)	0.13	0.18

Figure 3: Maximum U-values for extended domestic insulation envelope Section 6 2015

extensions to dwellings, which are particularly poorly insulated, must achieve a much higher level of thermal performance.

Compensatory approaches can be used to vary the U-values providing they are within the individual limit; and that overall heat loss is not greater than that of a compliant 'notional' extension of the same size and shape. This approach also allows extensions to poorly insulated buildings to be built to the values within column B. A 'notional' extension is created using the values in column A with the remaining reduction in heat loss achieved through improvements to the existing building envelope.

It is also now possible to use the whole dwelling approach for retrofits by modelling the existing dwelling and extension to calculate the TER and DER.

Non-Domestic Buildings

As with Section 6 2013, the National Calculation Methodology (NCM) is used within an approved tool, typically SBEM, to create a notional building from which a TER is generated. In addition to improving the building fabric performance values for the notional

	Heated and Naturally Ventilated	Mechanically Ventilated/ Cooled
Wall (W/m²K)	0.23	0.20
Floor (W/m²K)	0.22	0.20
Roof (W/m²K)	0.18	0.16

Figure 4: Notional building - fabric U-values

building, the new Standards also allow heated buildings to be separated into zones depending on whether they are naturally or mechanically ventilated.

A Building Emission Rate (BER) is then created based on calculated performance against the notional building. The actual specification can vary from the notional, provided the calculated BER is better than the TER and the limiting requirements are met. Fabric performance is strongly supported with tightened

A fabric first approach provides a simple route to compliance with the new Standards

	Area weighted average U-value limit	Area weighted average U-value limit – Shell buildings	Recommended Starting Point
Walls (W/m²K)	0.27	0.23	0.18
Floor (W/m²K)	0.22	0.20	0.15
Roof (W/m²K)	0.20	0.15	0.13

Figure 5: Maximum U-values for new non-domestic insulation envelopes in Section 6 2015

area weighted average U-values, particularly for shell buildings. Again, a recommended starting point for a fabric first approach for non-domestic buildings is provided in figure 5.

The requirements for converted and extended non-domestic buildings remain relatively unchanged from the 2013 standards although extensions with a floor area over 50m² must comply with the new build Standards.

Fabric to the Fore

Section 6 2015 represents a sensible step forward for Scotland. Whilst the additional carbon reductions for new buildings are significant, a well-considered fabric-first approach should ensure compliance and provide a strong base from which to move to near zero carbon construction in the future. ■

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Image: © Viridian

Building a home? Build a solar home

Paul Hutchens, Chairman of the Solar Trade Association New Build Working Group and Managing Director of Eco2Solar explains the benefits of fitting solar panels to new build...

Solar is a cheap and easy way of making the new homes and offices we build more sustainable, cheaper to run and compliant with ever more stringent building regulations.

The cost of solar panels has fallen around 70% since 2010 – solar is now cheaper than ever. Back in 2010 it might have cost you £6,000 to fit solar on an average new build. These days all in you are looking at more like £1,500 per plot.

Solar PV has become one of the easiest and lowest cost ways of meeting key carbon compliance standards for 2016 Building Regulations (or Code Level 4 and above of the now scrapped Code for Sustainable Homes). We are convinced that in the long term there is going to be more and more pressure to meet carbon saving requirements on site, rather than using complex offset schemes such as Allowable Solutions, and so we encourage house builders to be early adopters and make it part of their business models now. The government's own advisers, Zero Carbon Hub, were clear that solar PV on site is the biggest factor in the massive cost drop they recently calculated for Zero Carbon Homes in their revised cost analysis. There are some challenges that need to be overcome however, in that government is potentially ignoring their own advisers advice on new

Image: © Viridian

build standards for 2016 – although Labour say they will reinstate stronger Zero Carbon Home standards if they are elected.

North of the border, Scotland is forging ahead with much higher new build standards this year which is set to drive take up of solar. The group I chair at the STA will be working hard to ensure the rest of the UK follows Scotland's lead, and we will do so with strong public backing; a recent Mintel poll shows 8 in 10 people want to see solar in new homes. A Zero Carbon Home is the star of Ideal Home Show this year too.

Solar is a 'fit and forget' technology', meaning that once it is up on a roof there is virtually no hassle or maintenance with very long warranty periods of 25 years on the panels. The only thing the homeowner will need to be aware of is many inverters, the machine that turns the DC into AC, require replacement every 10-15 years at a cost of about £200.

More and more house buyers are attracted by the idea of living in a sustainable building that is cheap to run and treads lightly on the environment. Solar reduces homebuyers' energy bills, and brings with it a guaranteed Feed-in Tariff payment for the electricity generated for 20 years to come. When combined with trees, green spaces and well insulated buildings, it can all be part of a 'green' marketing package that attracts a lot of buyers – particularly first time buyers.

And it is also a selling point for investors. A poll of property investors conducted by CBRE recently showed that 70% of investors give weight to sustainability considerations when deciding where to put their money.

For any roofs that are perhaps too small or shady to be suitable for solar PV, there is also the option of solar thermal hot water heating. Even in northern climates solar thermal can easily provide between 50-70% of hot water needs over the year.

Solar PV is strikingly easy to install – the scaffolding is up anyway to tile the roof, so you might as well place a solar panel on there. Roof integrated panels are by far the most popular for new build homes. We are also now seeing more and more 'all black' panels rather than the classic 'blue squares' panels, which blend in well. And if you really want to push the boat out on aesthetics then there is also the option of solar tiles – the same size and shape as slate roof tiles – to blend in with the roof even more.

Solar doesn't take up precious internal space in our flats and homes either, other than a small inverter unit bolted to a wall in a loft or garage. In urban areas where every square metre comes at a premium, that is a compelling reason to choose solar over bulky biomass boilers or other green alternatives.

The supply chain is there. The stock is there. The prices are tumbling. The legislation mandating house builders to include green measures is becoming more and more stringent. If you're building a home, you might as well build a solar home. ■

Paul Hutchens
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Solar Trade Association New Build Working Group and Managing Director of Eco2Solar
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A fuel poverty crises – why only infrastructure will do

Bryn Kewley, Campaigner at the Energy Bill Revolution explores the facts behind our fuel poverty crises and calls on the next government to make home energy efficiency a national infrastructure spending priority...

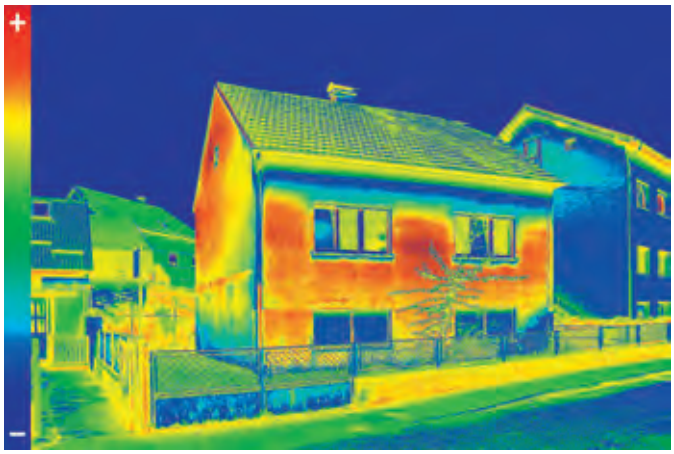
Shortly after the 7th May one man will hold the keys to No.10 Downing Street. The question is whether any of the contenders to be Prime Minister have a solution to one of the biggest threats to the UK's most vulnerable people.

Fuel poverty in the UK is at crisis levels. According to one European survey, only Estonia has a worse record. We're not talking about an extra sniffle or a few cold toes. The harsh reality is that thousands of people die every winter because they simply can't afford to turn on their heating. The UK has almost 30,000 Excess Winter Deaths a year on average with 30% of these attributable to cold homes. This is far more than in Scandinavian countries which have much colder winters. The stark truth is that cold homes cause more deaths in the UK than road traffic accidents, alcohol or drug abuse.

Two million children are also growing up cold in the UK. They face twice the likelihood of contracting respiratory diseases like asthma, are more susceptible to multiple mental health issues and will probably suffer a lower educational attainment than their peers in warmer homes.

The primary cause of this crisis is the fact the UK still has some of the least efficient housing in Europe. The UK has toyed with more energy efficiency policies than any other country in the world, but lessons have not been learned and they are failing.

Over the last two years the number of energy efficiency measures being installed in UK homes has fallen by 80%. It's been an energy policy car crash. The new flagship energy efficiency loan programme,



the Green Deal, has led to only 5,000 homes being retrofitted since the start of 2013. It was supposed to be taken up by at least 100,000 households in the first year. But the interest rates are too high and the offer too complicated.

The heavy lifting has been left to the Energy Companies Obligation, a levy on energy bills to subsidise energy efficiency measures in UK homes. But in the wake of high energy bills the levy has been cut back and the targets reduced. This has left fuel poor households without almost any major insulation support during the last winter. This is a winter in which the Association for the Conservation of Energy estimates 13,000 people died because they lived in cold homes.

Not all countries have chosen this path of low ambition on energy efficiency. The Swedes build and retrofit their homes to a high standard of energy efficiency. The gas they use to heat their homes costs more than ours; yet because they live in such well insulated and efficient homes they have proportionally half as many people in fuel poverty.

The Energy Bill Revolution is a major alliance campaign in the UK to turn things around. The alliance of 200 charities, businesses and unions is calling for a stable, secure and long term revenue stream to retrofit UK homes to a high energy efficiency standard. The solution is to make home energy efficiency a national infrastructure spending priority. If energy efficiency is going to be the first fuel, it needs investment.

"The harsh reality is that thousands of people die every winter because they simply can't afford to turn on their heating. The UK has almost 30,000 Excess Winter Deaths a year on average with 30% of these attributable to cold homes."

Over the next five years alone, the UK Government plans to spend over £100bn of public money on infrastructure projects such as road and rail. But despite the fact buildings are infrastructure, not one penny of this budget is yet pledged to retrofit homes.

This is a huge missed opportunity, the economic returns are vast. Cambridge Econometrics, one of the most respected economic institutes in the UK, took the Energy Bill Revolution plan to retrofit all UK homes and calculated the macro economic and fiscal impacts. The programme includes grants for all low income homes and 0% loans for everyone else.

The findings show that every £1 invested by the Treasury would see £3.20 returned in GDP, another £1.27 returned to HMT in tax and a further 42p saved by the NHS. This programme would completely pay for itself within 8 years. Importantly, its economic benefits are so great it would be classified as a high value infrastructure investment. And of course it would end the UK cold home crisis.

The key message from this ground-breaking research is that home energy efficiency investment is spectacularly good value for money. It appears that this value has been badly underestimated by economic ministries across Europe until now. Whole house retrofits to make our homes super energy efficient are one of the best investments a country can make.

We now wait to see whether the UK's political parties will take up the mantel to make home energy efficiency a UK infrastructure investment priority. Imagine standing on the doorstep and being able to state that your party, if elected, will invest in a massive energy efficiency programme than can save households over £400 every year, boosting the economy and ending fuel poverty.

It's not just a solution to fuel poverty. It's a vote winner. We'll soon find out which of our political leaders have the vision to embrace it. ■

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Engine emissions – 2020 vision

Malcolm Kent, Technical Consultant to the Construction Equipment Association gives an update on the progress towards new engine emissions legislation...

You might be thinking that you have heard enough of machinery salesmen telling you about European emissions legislation and why that means their Stage IV machines have to be more expensive than the last ones, but there is more in the pipeline. We have been reporting for some time on the plans for a European Stage V and we now have a pretty clear idea of where we are heading, but first, a bit of background.

European air quality is a problem

The member states of the European Union signed up a long time ago to make sure that the air that the people breathe is clean enough. They agreed limits for pollution levels in the air and agreed a timetable for delivery. Now, plans are one thing, but in reality can be different. Many of the member states, including the UK for some areas, are in breach of their obligations and are facing the prospect of massive fines. This is leading to huge pressure to do as much as possible to improve air quality by reducing emissions. Any company looking to work on major developments in London will be aware of the new rules on emissions from sites and the need to do assessments of dust emissions and introduce control measures where necessary. That also carries over to machinery with diesel engines. (See box opposite)

London Low Emission Zone

The controls in London were introduced via the 'Supplementary Planning Guidance' issued in August 2014 and make planning approval dependent on a set of conditions including the emission control levels of the machinery used in the construction phase. The requirements are as follows:

Note that the "emission stage" dates are complex and are different depending on engine power. Also, due to various details of the engine emission laws, there is no simple check as to what stage of engine is in a machine based on its manufacturing year, so a more careful check might be necessary. The dates for single-speed engines, such as are often installed in compressors and generator sets, are different again. Overall, due to this complexity, there are real concerns about how well the London boroughs will understand what is in a machine and be able to enforce the planning conditions correctly.

Implementation date	Affected	Required engine emission stage	Emission stage "came into force"
01/09/2015	Major developments, Greater London	Stage IIIA	2006 – 2008
	Any site in Central Activity Zone or Canary Wharf	Stage IIIB	2011 – 2013
01/09/2020	Any site within Greater London	Stage IIIB	
	Any site in Central Activity Zone or Canary Wharf	Stage IV	2014 – 2015

Negotiations are under way to allow some exemptions from the rules but at the time of going to press this was not finalised.

All the pressure about air quality has led to the view in some quarters that as much as possible must be done. It is well understood that pollution from on-highway engines adds up to a great deal more than the off-highway sector, but the view is that a contribution to improvement is required from off-highway too. No matter that diesel emission levels have been reduced by 96% over the fifteen years between Stage I and Stage IV: we have to make inroads on the remaining 4%.

Ultra-fine particles

One area of understanding that has developed over recent decades is the importance to health of ultra-fine particles in the emissions. All the off-highway engine emission limits so far, including the recently-introduced Stage IV, have been based on the total mass of pollutants emitted, with no regard for whether the particles are small or large. The on-highway sector has had controls on particle numbers (related to particle size) for some years now, which is why diesel particulate filters (DPFs) have been pretty much standard on vehicles for several years. So, where are we going with the next stage for off-highway diesels?

Stage V

After extensive debates, the European Commission have published their proposals for Stage V, but that is by no means the end of the haggling. The European Parliament and the Council of Ministers now get the chance to get their teeth into it and to propose amendments. The three parties will then go through a process to agree on the final text of the law. However, the Commission proposal gives us a pretty good idea of what is going to be in the final package.

Firstly, the principle of minimising the emission of ultra-fine particles is transferring into the off-highway sector for all engines between 19 and 560kW. That means that, unless someone comes up with some cunning new technology pretty quickly, all machines between the equivalents of, roughly, excavators from 2.5 tonnes to 150 tonnes, will need particulate filters. Of course, there are a lot of machines in the market today with DPFs already installed. That is because different manufacturers have chosen different ways of complying with the recent emissions limits. Some have

Malcolm Kent, left, discusses engine technology with Gary LaFine of Cummins Power Generation. Constant speed engines such as these will need to jump from Stage IIIA to Stage V in 2019.

used urea injection (such as Ad Blue) without a DPF while others have done the opposite and others again have applied both. However, the stringency of Stage V will probably mean less diversity in the solutions applied. Almost everyone, perhaps actually everyone, will be applying both urea injection and a DPF.

Timing

It's hard to be certain about when the new stage will come into force until the final legislation is published, but what is on the table now would mean that only Stage V engines can be built after the end of 2018 and engine powers other than 56kW to 130kW would be one year later. For machine manufacturers this means a huge crunch. They will need to engineer new engine installations for their full line-up of machines over a very short timescale. All production of pre-Stage V engines, from the smallest to the largest, will come to an end over a time span of just 12 months. That is going to consume an enormous amount of engineering resource.

Compressors and Gen-sets

The types of machines that will see the biggest changes are those which use constant speed engines. The definition of constant speed is strict – basically they are just on/off engines with no standby speed – but they are used in a great many generators and compressors. Although these engines come under the same law as variable speed engines, they have had different requirements up to now. Those constant speed engines currently regulated are still at Stage IIIA where the variable speed engines have gone through the changes of Stages IIIB and IV. However, from Stage V constant speed engines will have the same limits as variable speed engines and the introduction dates are the same too. That means that there will be a big jump in the technology applied to those engines and a much bigger jump in cost than is likely to be seen on variable speed engines.

The replacement engine bomb-shell

The one aspect of the proposed new legislation which is potentially the most worrying for machine owners is that it would prevent the manufacture of all non-Stage V engines from the date the new stage starts. That includes any intended as replacements for failed engines. Complete engine failures are quite rare nowadays but not completely unknown, especially as machines get older. Under the proposed legislation engine makers would be unable to manufacture old-spec engines to supply as replacements, meaning that the market would be reliant on reconditioned engines to keep machines going, but even then there would be legal and logistical obstacles to overcome. Given that the engine manufacturers do currently supply a moderate number of replacement engines for old machines it is hard to see how the gap will be filled. If it is not, it means that a machine with a failed engine could be scrap. That would to lead to a lot of unhappy conversations between machine owners and manufacturers' dealers. I can hear it now: "I'm sorry Sir, but we can't fix your engine. We can't replace it either, but can I sell you a new machine instead?"

Industry groups are not taking this lying down and are pushing hard for the draft legislation to be amended to allow the continuation of the supply of like-for-like replacement of engines for older machines. This will go on for several months yet so it's too early for us to know how this will pan out. We will have to wait and see. ■

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Combatting machinery theft

Commander Neil Basu of the Metropolitan Police outlines his involvement with the CEA's Security and Registration Scheme – CESAR, and how machinery theft is being reduced...

Commander Neil Basu is the head of Gangs and Organised Crime, within Specialist Crime and Operations for the Metropolitan Police and is responsible for some 2000 officers. In this article he explains how and why CESAR was born.

"It started in 2006 when the CEA came to us to highlight the problem that machinery theft was averaging something like £1.5m per week; with related costs running at many millions more and what were we going to do about it?" said Commander Basu.

"At that time, 'One Key Fits All' and 'One Stolen is Another Sold' were phrases often used and heard. The response from the Metropolitan Police to tackle the problem of machinery theft was three fold and we made recommendations/actions to the industry – these were that a Police Unit dedicated to tackling the problem of construction and agricultural machinery theft, a database set up to capture all reported theft for the UK and a universally accepted marking scheme recognised by the industry, for the industry was required" added Commander Basu.

These recommendations were embraced by the industry and working together with the Metropolitan Police Service the CEA took up the challenge to become the 'Owner' of the proposed marking scheme.

In November 2007 the first machine protected by the new industry marking scheme, rolled off the production line at JCB World Headquarters. "And so CESAR was born" said Commander Basu, "today over 150,000 machines are protected by CESAR."

Other sections of the industry, notably the insurance companies specialising in the arena of construction and agricultural machinery insurance recognised they had a part to play. Donations from the leading insurers to the Metropolitan Police Service secured the funding necessary to form the dedicated unit.

"In October 2008, The Plant & Agricultural National Intelligence Unit (PANIU) was formed and with that came the national database to capture all reported machinery thefts" reported Commander Basu.

As the reputation of PANIU grew, so too did the theft database. Accurate reporting of thefts was key so that the industry and the public had confidence in the police response. The plant theft figures peaked in October 2010 with an estimated £2m of machinery being stolen each week.

PANIU engaged with industry partners and embarked upon a crime prevention strategy the like of which had never been seen before. Machinery manufacturers were encouraged to fit CESAR as standard, as were major buyers of equipment and even end users were advised to consider security for the products they were using.

CESAR was quickly recognised as the industry standard with the insurance industry offering substantial discounts on premium if CESAR was fitted.

Working with Thatcham, the motor insurance test facility, a five star security rating system was introduced for construction and agricultural machinery, mirroring a similar system used by the motor vehicle industry. The more stars a manufacturer or end user could gain on their product, the greater the insurance discount offered.

The benefits were immediately obvious to all. Fit a unique key, immobiliser technology and CESAR to

Continued on page 246...

JCB INSURANCE LAUNCH 'TAILORMADE SOLUTIONS'

Commoditised Insurance

JCB Insurance Services are an Insurance Broker specialising in arranging all of the insurance a business needs.

As you would expect from a name like JCB, we focus on clients who are in the construction sector, especially businesses involved with Plant Hire, Ground Works, Civil Engineering and the like. We've been doing this for 31 years now and over this time we've developed a wealth of expertise in getting great cover, tailored to the individual business, whatever the size, at really a competitive cost.

Recently we've noticed that there's been a gradual shift in how some of the Insurance world treats its customers. In some ways it's become far less personal and far more commoditised. Insurance businesses seem to be trying to streamline processes, often on-line and taking a 'one size fits all' approach. Also, there's been a rise in the use of call centres and the like to handle claims where it all seems a bit 'sausage machine' and let's be honest, the claims service is the acid test of any insurance – that's why you buy it.

Personal Service

It has become ever more apparent to us that clients with multiple insurance policies really appreciate having a dedicated Account Handler dealing with their Insurance needs. Someone who takes the time to genuinely understand their business and attitude to risk. Also, there is a real benefit to having a single point of contact – someone who has arranged your insurance personally, understands exactly what it involves and also deals with your claims – not just reading a bit of background from a computer screen.

That's why JCB Insurance has formed a New Team – 'Tailormade Solutions'

Dedicated Team

We have pulled together a dedicated team of six long standing and highly experienced employees with over 100 years combined Insurance Industry service to work in partnership with you. Our aim is to provide a full specialist insurance broker service, providing a human face in an increasingly impersonal world. We believe that the relationship, advice and support that we give adds genuine value to businesses.

Exclusive Deals

Through our wealth of experience and knowledge we understand that the needs of the larger, more complex business do not suit standard products and we will never make something simply fit. We have strong relationships with many like-minded Insurance Underwriters who also understand the Construction, Plant and Groundworks industries. Also they are often willing to work with us on an exclusive basis because they have absolute confidence in our ability as a Broker. This means we are in a great position to achieve the best balance of insurance protection and cost available for you.

Working Hard – For you

When you're working flat out on your business, be reassured that we are working just as hard on your behalf to ensure that your Insurance needs are covered. Furthermore, your dedicated handler is only a phone call or an email away and when you need it, we will visit and meet up face to face too. A complete service from every day amendments to claims handling - we do it all.

As in introduction to Tailormade Solutions and as a thank you for placing your Insurances with our Team, we are offering every business with a premium spend over £10,000 the opportunity to win an I-Pad in our quarterly prize draw.

Don't leave it till tomorrow, visit our website or give us a call - our Team is waiting for your call.

JCB INSURANCE

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Continued from page 244...

the machine and 3 stars were immediately achieved. Broadly this led to a discount on premium of around 12.5%, year on year.

Commander Basu said, "We are currently working towards a more streamlined system of funding for PANIU where the MOPAC (Mayor's Office for Policing and Crime) has a single contract with the CEA instead of the existing eight individual contracts with the insurers. This agreement will further enhance and cement the relationship that exists between the MPS and the CEA.

"Working together with our partners, Allianz, Aviva, HSB Engineering, NFU Mutual, Northern Marine Underwriters, QBE, RSA and Zurich we have seen some remarkable results across the industry. Overall, machinery theft is down 33% since the peak of October 2010."

Commander Basu also highlighted further results from the CESAR Scheme, which is delivered by Datatag on behalf of the CEA:

- A machine protected by CESAR is 6 times less likely to be stolen than an unmarked machine;
- A CESAR marked item of machinery is 4 times more likely to be recovered in the event of theft. Not one John Deere tractor fitted with Thatcham 3 star product has been reported stolen to PANIU in the last 18 months;
- Just 5 JCB products meeting the 3 star rating have been reported stolen in the previous 18 months and one of these had the keys left in the ignition. JCB recorded theft has fallen 59%;
- We have recorded 1,201 CESAR marked items of equipment stolen and recovered 360 of them. That is 30%. The national recovery rate for machinery theft in 2008 was around 5%;
- Tractor theft was at its worst in the period July-September 2009 with 159 reported stolen. In the quarter April - June 2014 this has fallen to just 39;

Commander Neil Basu of the Metropolitan Police

- The most stolen item of machinery by generic type is the mini excavator. For Jul- Sept 2009 the figure was 256 reported stolen. Today that has fallen to 95;
- PANIU has assisted in or been directly involved in the recovery of over £12m of stolen machinery.

Commander Basu concluded, "The work of PANIU and the relationship that has been fostered between the Metropolitan Police Service, the CEA, Datatag and the wider industry is a brilliant example of what can be achieved in the fight against organised vehicle crime. This relationship has been born out of a shared desire to tackle head on machinery theft in the UK – a fact that I am very happy to recognise."

Rob Oliver, chief executive, CEA said, "Our partnership with the police has been key in ensuring that there is a committed crime fighting team working in tandem with the CESAR Scheme. Our scheme managers, Datatag, have now also been able to extend the practices and technology involved in CESAR to other sectors, including the motor cycle market. Future challenges are to extend the scheme take-up overseas and to build the value of our machine database for the benefit of our industry". ■

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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.

JCB Finance Key Stats:

- Total lending 1970-2012 – just over £8.0 billion
- Total lending in downturn (2008-2012) – c. £2.75 billion plus 4,604 new customers
- Many reports show that SME's have found it hard to access traditional sources of lending but in 2012 our lending grew by 31.7% with total turnover of £748 million
- In 2012 a total of 22,236 assets across 16,654 agreements were financed
- In 1993 we entered the Local Authority market lending c. £270m to date – current balances with 158 different Local Authorities
- Asset mix – JCB 62% and Others 38%
- In 2012 JCB Finance provided 21.3% (some months touching 40%) of all HP and Lease finance in the UK construction machinery market (according to Finance and Leasing Association asset finance statistics).

* JCB Finance Ltd is regulated and authorised by the Financial Conduct Authority. JCB Finance only provides asset finance facilities to businesses in the UK.

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JCB FINANCE

The ground you work on

Kevin Minton, Director of the Construction Plant Hire Association highlights the levels of risk involved in ground conditions for machinery and how it can be driven down...

All contractors on site don't just need to think about what happens above ground – they need to know and understand the ground they're working on. Ground failure can have serious and life-changing consequences.

The load that plant places on the ground is in many cases simply the weight of the machine. But it will also include the weight of the load or object that the plant is lifting – for a mobile crane, this could mean a massive increase in the force being applied through the outriggers, which will change as the load is moved.

The force put into the ground can be a lot more than just the weight of the machine and the load. An excavator that is pulling a sheet pile also has to overcome the friction and gripping force of the ground that is holding the sheet. These loads are increased by the natural forward tipping movement of the excavator, putting more force at the front of the tracks – frequently close to the edge of the excavation it is working on.

If the ground gives way, the plant and its load could move unexpectedly, or completely overturn. This could be caused by something as simple as an outrigger punching through a tarmac surface, or a more complex failure of soil strata some metres below the surface.

The strength and nature of the ground needs to be considered from the outset in any construction project, and is equally important to the selection and management of the plant. Ground use should be planned and managed as if it were part of the overall plant system.

The sorts of "ground" that need to be taken into account are as varied as the complete range of construction sites. This includes natural undisturbed ground, areas that have been worked on in the past or as part of the current project, embankments, spoil heaps, roadways, carparks, asphalted areas, docks, and other constructed structures. The surface of the ground can hide drains, culverts, tunnels and other underground features that can seriously affect its strength, both in narrow areas and over a wider worksite.

Whenever a machine loses control or overturns, there is always the possibility of serious or fatal injuries to the driver, and those working in the area. Even if no injury is caused, there will be serious losses, as not only is production disrupted, but the recovery operation can be difficult and costly. Research work by HSE found that for every £1 recovered through insurance following an incident, there was a further £8 to £36 that could not be recovered, which had to be borne directly by the employer.

The principal contractor in charge of the site has ultimate responsibility for assessing and managing the capability of the ground. They must work with plant companies, sub-contractors and ground engineering specialists as necessary to minimise the risk of ground failure.

Assessment and management of ground conditions must be part of the planning process. There are basically two strands of activity which are best done in parallel. One is to select the plant and to determine the nature and scales of the loads and forces that it will apply to the ground. The second strand is to gather information about the ground and its bearing

capacity. When sufficient information is gathered, an assessment is made as to whether the ground will take the loads imposed by the plant. This may mean that the plant needs to be changed, or that the job needs to be done differently, or that work needs to be done to improve the ground's strength.

Information about the ground itself may already be readily available from previous assessments or records, plans and specifications about work that has already been done. Sometimes, however, investigations on site are required. This could involve digging trial pits, or collection of samples using bores.

The level of detail in the ground investigation and assessment needs to reflect the complexity of the job, the reliability of the information, and the margins of safety that result from the selection of plant. Monitoring and management of ground conditions needs to continue as work progresses, not only to take account of changes in the task being done, but also changes to site conditions as a result of rain, snow, flooding or other influences.

The Strategic Forum Plant Safety Group recently wrote new guidance on Ground Conditions, in conjunction with the HSE, Temporary Works Forum and other industry bodies. Although guidance documents were already available, the new work emphasises the importance of the principal contractor's coordinating role. By ensuring that the supply chain communicates and works together, overall levels of risk can be driven down. When sectors work in isolation, responsibilities and liabilities can frequently be displaced to other parties, without actually reducing overall levels of risk.

The new guidance on Ground Conditions for Construction Plant is published by Construction Plant-hire Association (CPA), and can be downloaded from the CPA website at www.cpa.uk.net . ■

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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

The changes in the 2006 edition, incorporating the 2010 and 2013 amendments of AD B Vol 1, take effect from 6 April 2013 for building work carried out in England and for excepted energy buildings in Wales as defined in the Welsh Ministers (Transfer of Functions) (No. 2) Order 2009. The 2006 edition incorporating the 2010 amendments will continue to apply to building work started before 6 April 2013 or subject to a building notice, full plans application or initial notice submitted before 6 April 2013.

To view the document – click on the link below

www.planningportal.gov.uk/uploads/br/BR_PDF_AD_B1_2013.pdf

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#Download

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

The 2015 edition of Approved Document G (Sanitation, hot water safety and water efficiency) contains changes to the water efficiency requirements. In particular, it introduces an optional requirement of 110 litres/person/day where required by planning permission, and an alternative fittings-based approach to demonstrating compliance. It also includes the water-efficiency calculation methodology for new dwellings, approved by the Secretary of State. This edition incorporates previous amendments. It replaces the 2010 edition of Approved Document G, as amended.

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

The changes to Part L will now come into force in April 2014 and will set a requirement for new homes to achieve a 6% carbon improvement on 2010 regulations across the build mix.

The Government also announced that it would shortly be consulting on the next steps to Zero Carbon Homes and also on delivering Allowable Solutions.

In summary the headline changes are:

- Projected £16m savings per annum to business;
- 6.4 million tonnes CO_2 saved per annum.

To view all the documents click below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partl/approved

Part M – Access to and Use of Buildings

This document has been split into two volumes:

Volume 1 – Dwellings

Volume 2 – Buildings other than dwellings

This 2015 edition of Approved Document M: Volume 1 (Access to and use of dwellings) only covers dwellings and contains updated guidance. In particular, it introduces three categories of dwellings:

Category 1 – Visitable dwellings

Category 2 – Accessible and adaptable dwellings

Category 3 – Wheelchair user dwellings

Categories 2 and 3 apply only where required by planning permission.

Part M in Schedule 1 to the Building Regulations has been amended.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partm/adm/admvol1

Part N – Glazing – Safety in relation to impact, opening and cleaning

Changes coming into effect on 6 April 2013.

In 2013, Part N of Schedule 1 to the Building Regulations 2010 (as amended) and the current edition of AD N will be withdrawn, with the functional requirements and technical guidance in them subsumed into Part K and AD K respectively.

However, AD N (1998 edition including 2010 amendments) (archived below) will continue to apply to building work carried out in Wales from 6 April 2013.

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

Part Q (Security: Dwellings)

Security requirements for dwellings are set out in Part Q of Schedule 1 to the Building Regulations.

The aim is to introduce a level of consistency and consolidate cost effective measures to reduce the incidence of burglary.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/partq

Building Regulation 7 – Materials and workmanship

This document requires that any building work shall be carried out with proper materials and in a workmanlike manner. It reflects the full implementation of European Regulation 305/2011/EU-CPR covering construction products referred to as the Construction Products Regulation, from 1 July 2013.

To view the document – click on the link below

www.planningportal.gov.uk/buildingregulations/approveddocuments/workandmaterials/approved

Index

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below & above ground archaeology

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