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"IT IS ANTICIPATED THAT THE UK WILL NEED TO DELIVER A MILLION NEW HOMES BY 2020 TO KEEP UP WITH HOUSING DEMAND."

London 27 September, 2016
Guest speaker **Paul Fletcher** presented:

"The fourth industrial revolution and the built environment"

EXECUTIVE SUMMARY

The evolving nature of how people live is creating a much needed catalyst for change in the built environment industries.

Kim Vernau, CEO, BLP Insurance highlights the key points raised at an interactive discussion organised for industry peers. Guest speaker Paul Fletcher led the thought provoking session, providing the context for change and posing the question of just how smart do we need to be to meet the needs of an agile society.

If Smart Buildings are dependent on the internet of things are those 'things' good enough and are the buildings we create any better? Indeed, how is combining them 'smart'?

INTRODUCTION

Technology is fundamentally changing the very concept of what we consider a building to be. The interconnectivity of people and the way the environments in which we live and work enable that connectivity, is increasingly blurring the lines between people, buildings and digital.

Smart buildings, the internet of things and artificial intelligence are all gathering momentum as the fourth industrial revolution evolves, providing a context for change. The success of the built environment industries in their ability to respond to evolving consumers' wants and needs and changing lifestyle choices, all lies in strategic innovation. Only smart thinking can provide the catalyst for change.

DISRUPTION IS COMING, ARE YOU READY?

It is anticipated that the UK will need to deliver a million new homes by 2020 to keep up with housing demand. The reality is that construction delivery can't keep up with these supply requirements and the industry is rapidly reaching crunch point. Indeed, it is widely reported that the UK is in the midst of a chronic housing shortage.

It is not just the huge gap between supply and demand that is the issue. Buildings are not improving; they are at best static, if not declining in terms of performance, cost and quality. Numerous factors have been blamed and various government initiatives have sought to provide a solution, but there is no silver bullet. It is a change in mind-set that is really required for the industry to be able to reap the benefits that harnessing technology should bring.

Standing still is not an option. Disruption to the built environment is already taking place, driven by growing expectations and demand from the end consumer. Consumers are becoming increasingly astute about how good or bad their environment is, in terms of enabling them to live as they wish with all the latest mod cons. The result is that we are seeing the consumer becoming all powerful and driving change. Consider Airbnb, a company whose success lies in disrupting the rental markets, as just one of a myriad of examples.

DISRUPTION IS COMING, ARE YOU READY? (CONTINUED)

Innovation is clearly essential, yet it is being stifled by an industry that is inherently conservative. Across Europe innovation has fallen behind for the past two years, with construction innovation being one of the lowest, according to the European Commission's 2016 Innovation Scorecard. Furthermore, the internet of things is evolving at a rate which the building industry is finding increasingly difficult to keep up with.

At the same time, disruption to the employment landscape is inevitable as changes to business models brought on by technological and socio-economic developments continue to take hold. The global workforce is expected to experience a significant shake-up between job categories and functions over the next five years according to the World Economic Forum's 2016 The Future of Jobs report.

Job categories in decline between 2015 to 2020 include those in the installation and maintenance, construction, extraction, manufacturing and production fields. This is perhaps relatively unsurprising in the built environment industries, given the increasing prominence of build-offsite and other modern methods of construction. On the other hand, architecture and engineering, business and financial operations, and sales related professions are all jobs anticipated to be on the rise, but not as we traditionally know them. This isn't a continuation of business as normal but a disruption of the unknown.

NAVIGATING CHANGE WITH INNOVATION

Strategic innovation is essential if we are going to create smart buildings that people want to live and work in. The built environment industries need to embrace the catalyst for change brought on by technological advancements and respond to the consumers' ultimate needs to create better buildings.

Better questions lead to better answers

Innovation is more than just adopting new technologies, or digitalising existing systems and processes. Building Information Modelling (BIM), for example, has sought to understand how buildings and processes can be made more efficient through digital means, but that is not innovation. It is harnessing technology to address problems that have been around for years and years, rather than being innovative.

The emphasis needs to focus on the "what" instead of the "how". By asking better questions about what a building should be providing for the consumer, only then can the industry hope to achieve smart answers around building requirements.

Buildings as a Service

To respond to evolving consumer demands organisations will need to change how they operate, by moving away from being product centric towards providing a more service orientated culture. The internet of things is no longer about purchasing the latest shiny gadget; it is about the ability of the consumer to access a service.

This is already in action with the SaaS (Software as a Service) model, where instead of buying software you rent it for a nominal fee. So far, this has been extended to platforms (PaaS) and hardware (HaaS) models, so is it really far-fetched to think that we could soon have a "Buildings as a Service" model? What is clear is that if there is going to be any chance of achieving so-called smart buildings, innovation in the construction industry needs to be on a similar trajectory to the internet of things.

NAVIGATING CHANGE WITH INNOVATION (CONTINUED)

Innovation is nothing without creativity

Creativity is a vital skill when it comes to innovation. According to the World Economic Forum's 2016 The Future of Jobs report, it is anticipated that it will leap from the tenth most important skill for the work environment in 2015, to third place by 2020.

In the construction industry creativity is currently only considered around the act of design, but its potential is much more than that. It is about using creative skills in a different way to approach problems and understanding, such as taking insight from new technologies to create new opportunities. It is this creativity around design thinking which the industry needs to enhance if it's going to be disrupted.

Strategic innovation

Having a vision and driving that vision towards value lies at the heart of strategic innovation. By giving meaning to a product or service you can find the route to value. It is this reason why products like the iPhone are so successful; users attach a meaning to the device, such as the fact that it enables you to stay in touch with loved ones. Better questions around what a phone is and its meaning for the end consumer have resulted in better in-use scenarios. When it comes to the built environment industries, it's questionable as to whether we have lost the meaning of what a building actually is and means.

Innovation can be evolutionary, by extending existing products and services into an entirely new marketplace or by adapting and bringing new products and services to an existing client base. Revolutionary innovation, on the other hand, is the rarefied step of creating whole new products and services for a whole new marketplace. It all comes down to using innovation strategically and, regardless of the approach, it should be focused on planning to disrupt an industry or intentionally gearing up for a disruption that's coming.

CONCLUSION

Every player in the built environment industries will need to at some stage adapt or innovate in order to stay relevant and competitive. There is no getting away from the fact that disruption is coming as the fourth industrial revolution evolves, but there is every opportunity to embrace this catalyst for change.

There is no hard and fast answer as to what this disruption will ultimately mean for the built environment industries. However, it is imperative that a dialogue is conducted even if this means challenging some of the fundamental principles and premises of the construction industry as we know it today.

What is a building and what is stopping us from making buildings better? Only with smart questions can the industry ever hope to achieve smart buildings.


"WE ALSO NEED TO THINK ABOUT FUNDAMENTALLY CHANGING THE WAY IN WHICH WE BUILD."

Birmingham 10 November, 2016
Guest speaker **Mark Farmer** presented:

"The burning platform for construction"

EXECUTIVE SUMMARY

The UK construction industry faces irreversible decline over the next decade unless industry leaders, market participants and the government take fundamental steps right now to change how the industry works.

Kim Vernau, CEO, BLP Insurance highlighted these key points at an interactive discussion organised for industry peers on the uncertain future of the UK construction industry, due to its growing skills shortage. Guest speaker Mark Farmer, CEO of Cast Consultancy, led a call to action, discussing the need for the adoption of more pre-manufacture led construction, with a greater use of automation, leading to a changing skills mix for the future which embraces digital engineering.

INTRODUCTION

The future of the construction industry has now reached a critical point. Almost ten times as many workers are leaving construction than are coming into the industry. As the workforce shrinks, the Brexit effect will also hit in the next few years, with migrant workers no longer taking up the slack. This all represents a gathering storm not just for construction but for the UK economy as a whole, to which construction contributes around 7 – 8% of GDP.

The solution to this gloomy picture not only lies in attracting people to the industry and providing them with the requisite skills; we also need to think about fundamentally changing the way in which we build. We need to see a shift in mind-set across the whole supply-chain towards the merits of pre-manufacturing and off-site construction in driving increased productivity. This doesn't mean abandoning traditional methods completely, but a manufacture-led approach will ultimately be central to the future success of the industry.

CONSTRUCTION IN CONTEXT

The construction industry employs around 2.4 million people. ONS data and statistics suggest that in the next ten years we are going to lose in the order of 650-700,000 workers, purely through people retiring out of the industry. This is before taking into account those who might leave as a consequence of a downturn, which could see people rotating into other sectors, as well as those who might become unemployed.

Contrastingly, on average we are only seeing between 15,000 to 20,000 people join the industry, in terms of core tradesmen. This suggests a scenario in about ten years' time of somewhere between 20% to 25% of the available construction workforce having left the sector. This is particularly acute when considered against the backdrop of the government's housing ambitions. Even then, targets of 200,000 new homes per year are somewhat modest, given the radical shortage of housing supply, especially when it comes to affordable housing.

The government also has ambitious infrastructure plans, including large programmes such as HS2, Hinckley Point and Crossrail 2. This will serve to remove construction capacity further. The big picture is one of increasing stress on the construction workforce, and one which requires a change in approach quickly if we are going to have any chance of meeting future demand.

OPPORTUNITIES FOR PROGRESS

The most important challenges facing the construction industry are not those most often highlighted; namely construction costs, capacity, land and planning. Land is a finite resource, but with a more liberal planning regime we can increase land availability. Such decisions are purely policy choices resolvable by government agreeing to open up land for construction and development. Policy measures can also be taken to fix the planning system. However, capacity issues are structural and can only be resolved by generational change.

Young people see a world of opportunities available to them, often more attractive than traditionally skilled jobs. Digitalisation is a phenomenon that is fundamentally transforming the majority of sectors and the construction industry should not fear the benefits that can flow from technology. However, unless the opportunity to participate in digital methods and strategies is afforded to those starting out in the industry, they may well vote with their feet and select other career paths.

Dudley College is a pioneering venture on this point. Its Centre for Advanced Building Technologies looks likely to become one of the most advanced further education colleges in the UK for modern methods of construction. This isn't just about volumetric and pre-manufacture, it also includes different systems such as pre-casting that can be integrated with conventional construction techniques. The idea is that there are conventional trades alongside multi-skilled, digitally enabled jobs as well. BLP Insurance has been appointed as the local Technical Inspection provider on this new centre for excellence, which is being built trialling integrated project insurance.

FOCUS ON PRODUCTIVITY

The housing crisis will simply not be resolved by saying that we're going to do more and more with less and less. Instead we need to think about higher productivity working in construction which ultimately comes down to the way we build. There is a limit to what you can do with traditional trades to overcome this productivity issue. By its very nature, site-based construction has so many vagaries around delivery that it is difficult to control and predict the outcome.

This doesn't negate the need to continue to train bricklayers, carpenters and electricians and other tradesmen in traditional practices. It's about creating a manufacture-led approach to construction, where new methods mature alongside traditional construction industries.

There is no doubt that we produce some innovative and world class buildings in the UK, but there is a genuine need to harness this innovation beyond a single project into something that can be rolled out more widely. The reality is that there is no real incentive to collaborate for the greater good of the industry. The challenge is how we develop this insular R&D culture in the UK into something that completely reforms the way we deliver buildings that all industry participants can tap into.

CHALLENGING CHEAP STEREOTYPES

In the past, there has been a perception issue related to the whole modular off-site agenda. Unhelpful stereotypes include the notion of pre-fabrication, which immediately conjures up negative imagery of 1950s post-war, poor quality buildings.

The reality is that the world has moved on considerably since then. New products are being released all the time and are evolving at a steady pace. The focus is now very much around high-tech manufacture and precision engineering. The technical solutions available are diverse; from steel-based

CHALLENGING CHEAP STEREOTYPES (CONTINUED)

systems, timber (cross laminated timber, in particular) and concrete based systems, or hybrids of all of these. Steps have already been taken to help overcome concerns raised around off-site techniques and modern methods of construction, through the launch of the Buildoffsite Property Assurance Scheme (BOPAS). The Scheme provides assurance to mortgage lenders, valuers, funders, landlords and homeowners that properties built from non-traditional forms of construction will be durable for at least 60 years without the need for disproportionate maintenance.

BOPAS, which was developed in partnership with BLP Insurance, the Royal Institution of Chartered Surveyors (ROCS), Council of Mortgage Lenders (CML), and the Association of Building Societies, gives an independent assessment of quality and reassurance for investors, developers and owners.

SHIFT IN MOMENTUM

The terms modern methods of construction (MMC) and build off-site are rapidly gaining increasing prominence among both national and construction trade journalists. Heightened political interest is no doubt making an impact. Construction has been increasingly creeping up the political agenda, viewed by Number 10 as a key issue to be addressed. To this end, the Autumn Statement included measures to support the industry and work is being done to understand the full scale of the challenge.

A chief flag-waiver for the manufacture-led approach to construction can be seen in work being undertaken by Legal and General. In Yorkshire, the firm has opened the world's largest modular construction factory and it is anticipated to be operational by the second quarter of next year. The firm has publicly stated that it will manufacture better quality, more energy and time efficient, and lower cost housing construction to rival conventional methods. In this endeavour, it is bringing truly transformative change.

CONCLUSION

There is an increasing recognition about the challenges facing the construction industry, and its far-reaching implications. However, the biggest hurdle is a behavioural one in terms of people's resistance to change. It's easy to follow the same methods and offer the same advice, but there is an incumbent duty now on all market participants to be innovative, progressive and to push the boundaries. There is a great chance to leave a legacy for the next generation, but if we don't collectively take responsibility we're all going to be picking up the pieces in ten years' time.


"SUSTAINABILITY IS A COMPLEX WORD WHICH HOLDS DIFFERENT MEANING FOR DIFFERENT PEOPLE."

Bath 19 January, 2017
Guest speaker **Charles Secrett** presented:

"The drivers for sustainability in construction and the urban environment"

EXECUTIVE SUMMARY

At a local, national and global level business as usual simply isn't working when it comes to construction and the urban environment, and the cost of inaction is becoming increasingly clear.

Kim Vernau, CEO, BLP Insurance highlights the key points raised at an interactive discussion organised for industry peers on the drivers for sustainability in construction and the urban environment. Guest speaker Charles Secrett, co-founder of The Robertsbridge Group, led the thought provoking debate on the essential roles and responsibilities for insurers, construction professionals and city planners to help accelerate a sustainable and prosperous future.

INTRODUCTION

The insurance sector, construction professionals and urban planners face complex demands and a turbulent policy environment which often appear to hinder action rather than easing the way for a collaborative approach. To help achieve truly sustainable development and drive solutions to combat embedded economic, environmental and social problems it is more important than ever that our working practices are aligned.

Overcoming the difficulty of 'doing things right' means navigating four deeply rooted and inter-connected factors: namely, the dynamic between the natural environment, economic imperatives, social and community impact, and bolder, better decision making.

THE MEANING OF SUSTAINABILITY

Sustainability is a complex word which holds different meaning for different people. Traditionally associated with environmentalism, it has transformed throughout the years from a focus on natural resources and ecosystems, towards economic development, social development and environmental protection.

The term sustainable development only came to light in the late 1990s at a summit in Rio de Janeiro, when it was given its first overarching definition: "Sustainable development is development that meets the needs of the present, without compromising the ability of future generations to meet their own needs". This went a step further in 2000 when the UN defined seventeen sustainable development goals to make global progress on poverty, education, health, hunger and the environment.

In truth, sustainability is more than just a word, it's a concept and something that needs to be considered in a way that is useful to businesses, sectors and to us as individuals. Rather than assigning it a loose definition, it should be a set of principles; an approach and methodology for development that's about solving worldwide problems and, by doing so, creating much needed opportunities. It requires us not just to see the world in a different way, but to act differently too.

DISRUPTION IS COMING

With the inevitability of technological developments, every sector and every industry is being disrupted. The housing sector is no exception. Against the backdrop of a housing supply crisis in the UK, exacerbated by shortages in skilled labour and materials, off-site construction methods and modular housing techniques provide a clear solution. But it's completely conceivable that the workforce for this construction process could be taken over by intelligent robotics in the future and, much the same as self-driving vehicles, we need to consider the social consequences.

In this respect, technological development and disruption is a double-edged sword and one which we need to learn how to use wisely. So fast and so extensive are these changes that society is struggling to keep up. We need evidence-based decision making, driven by results that promote resilience, stability, adaptability and importantly, investment. This requires greater collaboration across sectors, governments, communities and generations to achieve mutually beneficial outcomes.

Ultimately, disruption comes about because of the amalgamation of the actions of millions of individuals and companies across the world. It comes down to personal values and choices. From this perspective, SMEs are potentially even more important and influential than larger companies because of the role they play as generators of jobs and sustainable growth. The opportunity to contribute to change is there, regardless of the sector you fall into or the size of your business.

NO ONE-SIZE-FITS-ALL SOLUTION

Throughout history we've taken a silo-based approach to decision making, behaving as though we live in a static and linear world where the consequences of our actions are limited and carry little bearing on others. In businesses, this has led to attitudes that prioritise competition. We've seen communities become increasingly individualistic and divided from one another. Instead, we need to see the world as a set of interlocking and inter-related systems if we're going to achieve the right sort of development at both a local and global level.

There is no quick and easy silver bullet solution. An attitude that big is always better has seen billions and billions of pounds poured into large one-off development projects, rather than seeing the merits of spreading the investment across the country where it's needed the most. We need joined up thinking and actions that lead to multiple benefits and solutions.

Decision making around development needs to be more than just two-dimensional. First, we need to consider all the major stakeholder groups; from individuals, households, companies, social organisations and government, both at a national and local level. Then we need to take into account all of the tools at our disposal, including taxes, policies, spending, laws, advice and guidance. Ultimately, it's a Rubik's cube of development that we need to play around with until the sides match up and we reach appropriate solutions.

TAKING SUSTAINABILITY A STEP FURTHER

Larger companies are falling over themselves to get on the sustainability bandwagon. Consumers, the public sector and partners along the supply chain are increasingly expecting and demanding high environmental and social performance, whether that's through a company's operations, its services or the products produced.

TAKING SUSTAINABILITY A STEP FURTHER (CONTINUED)

Instead of being viewed as an added bolt-on, sustainability is increasingly being viewed as a key responsibility of every organisation and a core part of the business plan. The merits of developing a sustainable-based business plan are numerous, namely gaining competitive advantage and building brand reputation among stakeholders, whether that's at a local, regional, national or global level.

There is a clear shift underway in business behaviour in terms of taking on board sustainability as a priority, but we now need to take how we view sustainable development a step further. We now have the technology in place to utilise buildings as individual power stations, producing self-sufficient clean energy for the owner with surplus then sold back to the grid or used as part of a genuinely community based sustainable energy scheme, to power streets, neighbourhoods, and potentially whole towns and cities. The opportunity for buildings isn't just limited to pollution, waste and climate responsibilities, it's about thinking about the role of a building in a very different way.

One of the key business barriers to sustainability, hindered by current policy frameworks, is the focus on short-term performance indicators. Looking at the anticipated costs over the lifetime of a building, it makes sense to maximise its energy efficiency, using environmentally sustainable products and materials and potentially even a self-generating energy supply. However, all too often, the perceived initial capital outlay means that traditional builders often don't go for green.

Businesses of all sizes need to be proactive, ambitious and provide direction for change. This means evaluating costs from an environmental and social perspective as well as from purely a financial and economic stance. Spreading impact can only truly take hold by mobilising across the whole supply chain. An environment of learning from others across the sector is key to share knowledge and to spread skills and understanding.

THE ROLE FOR POLICY

If businesses are going to behave in a certain way and produce certain desired outcomes, it's imperative that there is a supporting policy framework. National policy is critical and as individuals, and through professional trade bodies and associations there are priorities which we need to stand up as advocates for.

We need a national policy framework which works across the country and which serves to build local and regional economies, increasing productivity, innovation and clean, efficient jobs-rich work. We need an industrial strategy out of Whitehall whilst also considering the merits of reintroducing regional development agencies once again. And of course, we also need a skills agenda and apprenticeship schemes which actually work at bringing new people into jobs, helping them to learn new skills in a way that's also affordable for companies.

CONCLUSION

We are quickly reaching our ecological, social and economic limits. There is no quick and easy 'magic bullet' solution, but desirable outcomes and the means to achieve them can be identified that will affect how we work, the products we deliver, and a safer, securer style of urban regeneration benefitting present and future generations.

As we stand on the brink, we have a responsibility to work together and pull our weight, whether that's as individuals, companies, communities or political parties. It's in our grasp to achieve sustainability if we can frame development in the right way, but it needs to be seen not as a cost but as an opportunity.

"WE NEED TO BE CLEVERER, NOT ONLY IN THE WAY THAT WE USE OUR BUILT ASSETS, BUT ALSO IN ADAPTING A MORE TARGETED APPROACH TO HOW WE CONSTRUCT NEW ONES GOING FORWARD."

Cambridge 23 February, 2017
Guest speaker **Dr Jennifer Schooling** presented:

"The role of sensors and data in the built environment"

EXECUTIVE SUMMARY

Ageing and inadequate infrastructure, which fails to meet our society's changing demographics and lifestyle needs presents an increasing challenge for the future of our UK cities.

Kim Vernau, CEO, BLP Insurance highlights the key points raised at an interactive discussion organised for industry peers on the role of sensors and data in informing sustainable design and management decisions within the built environment. Guest speaker Jennifer Schooling, director of the Centre for Smart Infrastructure and Construction at the University Cambridge, provided an engaging insight into the world of engineering and advances being made to harness information more effectively in infrastructure projects.

INTRODUCTION

Modern infrastructure must be robust, resilient and adaptable to change, but it also needs to be optimised in terms of efficiency and cost. To do this we need to harness information more effectively in infrastructure projects, and use this to help inform better decisions about the way in which we build.

Emerging technologies in sensor and data management provide a compelling solution to transform infrastructure through smarter information. The potential for reduced costs and efficiencies are game changing, but it all comes down to our potential to harness this data to get the most out of our infrastructure now and in the future.

THE INFRASTRUCTURE CHALLENGE

The UK's ageing infrastructure is facing huge challenges. A large proportion was originally built by the Victorians, with no expectation that we would still be relying on it as the backbone to UK infrastructure 150 years on. The more recent construction boom of the 1960s can also be commended for having all the right intentions, but a lot of the assumptions that were made about how people would want to live and use those built assets turned out not to be right.

The problem lies in the fact that infrastructure by its very nature is subject to a lot of change. Shifts in demographics and the impact of climate change will all affect the requirements on the built asset and its ability to respond over time. The reality is that infrastructure in the UK is under far more pressure than it was ever designed to be, and we don't yet know what the impact will be on the current condition of the asset and the length of its residual life. It stands to reason that loading something more and more will inevitably have an adverse effect on increasing its degradation date.

Shifting factors will also lead to changes in how we design our infrastructure, how we build it, how we operate it and how it is maintained. It opens up a pressing need for innovation. We need to be cleverer, not only in the way that we use our built assets, but also in adapting a more targeted approach to how we construct new ones going forward. We can't simply build our way out of a capacity constraint.

BARRIERS TO INNOVATION

There are a number of key barriers to innovation in the construction industry, the first being that as a group we are inherently conservative. Against a backdrop of low margins and heavy regulation, you can see why we would not challenge the status quo and it would take a brave person to stick their neck on the line and say we're going to do something completely different.

In construction we also see a race to the bottom in terms of pricing, so that the environment we are operating in is one where things are procured for the lowest cost rather than the best value for money.

Another challenge lies in the complex and fragmented nature of the industry. The supply chain has multiple layers from the design through to the construction phase, and that's before you even consider operating the assets and ongoing maintenance. The result is that no one organisation or individual has a responsibility for driving forward innovation.

There is also limited incentive to invest in innovation because the asset will inherently be built, managed, owned and maintained by different organisations throughout its lifespan. On top of that, when we're looking at the whole life value of the asset, it could potentially span several professional careers, let alone several organisational contracts. The challenge then becomes how you incentivise someone to invest in something now which will only reap the benefits 20 years down the line.

One of the key hurdles to overcome is getting clients to ask for what they want from the supply chain. In our fragmented industry, if the client doesn't ask for a change in how things are done, it's very difficult for the industry to deliver because of the high level of investment required. In a world of low margins there needs to be strong business case for investing in new technology.

We therefore need to think carefully, not just about the infrastructure and data challenges that we're currently facing as an industry, but also the commercial and contractual backdrop and how it needs to be adapted to work in the current environment.

SMARTER CONSTRUCTION

The onset of the so-called fourth industrial revolution brings with it a huge opportunity for using sensor technology and digital information to better understand our assets at every stage of their life cycle. This is the concept of smart infrastructure and in essence it comes down to using the digital to better manage and maintain the physical asset.

There are an increasing range of data sources, but crucially it's what you do with that data that will allow you to get the best value out of it as an asset. Reducing costs of sensors as well as the generation and storage of data represents an amazing potential resource. The challenge we are currently facing is that given the volumes of data we need to get much better at how we curate and manage that data.

We also need to consider how we can use advances in technology to help make sense of that data in a way that a decision maker can use it. While increasingly decisions are being made by machines, more complex decision making will always need to be done by humans. The opportunity comes from being able to make better decisions. In effect if we have better information based on better data, we can make better informed decisions.

DIGITAL BUILT BRITAIN

Building Information Modelling (BIM) tools are no longer confined to the collaboration and design of an asset, but it's also being used in the construction of that asset. As we move into BIM Level 3, or Digital Built Britain, we're going a step further by using the digital data to manage the physical asset through its whole life cycle. The complexity lies in understanding how you manage the inevitable growth in data and growth in complexity as the infrastructure ages.

The progress of digital imagery techniques presents a real opportunity to capture an accurate representation of what was built. It represents a real game changer for the industry and provides a reassurance that when the digital asset is handed over it accurately reflects what was built and be taken forward with confidence.

Using the data from sensors, can not only be used to inform the construction process, but it can also feed back into the design process. The idea being that if you are building something over and over again you can actually look at how the asset performs during construction and during use and take that information and feed it back into the design process to design it better next time.

This is, however, an inherent tension in the construction industry when it comes to the reluctance of market participants to give away too much information, versus that information actually being something that is helpful to the industry. We need to move to a much more collaborative approach in the sense that we're confident to share information and data with each other for the greater good.

CONCLUSION

The lifecycle of infrastructure is being extended and optimised through the smarter use of data. For construction professionals, the implications and cost efficiencies are game changing.

The way in which sensor technology can be deployed and integrated through the construction process, from design through to operation, will enable better and more informed decisions. Most importantly it will enable increased whole-life value; using the information around the condition of the built asset to deliver higher quality performance, at best value, over the lifetime of the asset.

Data continues to give value throughout the life of the physical built asset. This is a concept that as an industry we have been slow to take up and it will require a big culture shift within the industry if we are to appreciate the true value of data in transforming our infrastructure.

“THE TIDE IS NOW CHANGING, AND LAST YEAR SAW 7,000 NEW BUILD STARTS ON SITES ACROSS THE CITY.”

Manchester 30 March, 2017
Guest speaker **Paul Beardmore** presented:

"The value of modular construction in revitalising the housing market"

EXECUTIVE SUMMARY

Housing in Manchester is experiencing a significant turnaround, with an overall rise in residential developments demonstrating a new confidence in the market. Despite this growth, there is still significant undersupply to meet demand, presenting a major opportunity for investors and developers to embrace alternative methods of construction and new partnerships to bring forward development.

Kim Vernau, CEO, BLP Insurance highlights the key points raised at an interactive discussion organised for industry peers on the value of modular construction in revitalising the housing market. Guest speaker, Paul Beardmore, director of housing at Manchester City Council, provided an engaging insight into the council's approach to residential growth in the city, and the essential need for collaboration and shared vision between the development and construction industry and key policy makers.

INTRODUCTION

The planned housing target for Manchester is at least 2,500 new homes per year, but this figure has not always been achieved. In common with much of the UK, Manchester has experienced a downturn in the development of new homes in recent years, dropping from a high of 3,500 completions in 2008 to just 900 in 2015. The tide is now changing, and last year saw 7,000 new build starts on sites across the city.

Greater Manchester has been clear in its commitment to increase the pace of residential growth. Plans are already being implemented to drive this significant turnaround in the provision of new housing; from the policy support that the city gives for the promotion of institutional PRS, to the increasing focus on modular off-site development in revitalising the housing market.

HOUSING STRATEGY IN GREATER MANCHESTER

Greater Manchester has a total of around 68,000 social rented houses, including over a third of the housing stock of Manchester City Council. With such large supply available, increasing quantity has ceased to be a priority. Instead, it is about making sure that the right type of social housing is available to meet demand. This involves removing old, outdated and badly designed housing and replacing it with properties which are more appropriate to the affordable housing market in Greater Manchester.

This is especially relevant for Manchester's ageing population, with a large proportion of Manchester City Council's social housing tenants now over the age of 55. Consideration must therefore be given to whether there is a better housing solution for this age group, as evidenced by the Village 135 development recently completed in South Manchester. By creating an extra care retirement village, on a much tighter and intensified development footprint, 135 family houses have been released to help meet rising demand for social housing in the city.

HOUSING STRATEGY IN GREATER MANCHESTER (CONTINUED)

Another key characteristic of Greater Manchester's housing market is that it has a disproportionately higher number of low value properties, with over 65% of existing housing stock in council tax band A. It has been a consistent strategy of Manchester City Council over the past 15 years to encourage higher value residential development.

There is also a drive towards a more mixed housing economy in terms of tenure, particularly around increasing owner occupation in Manchester. Over the past seven years this has been particularly challenging, but we're now seeing the return of demand for owner occupation in Manchester's city centre once again outstripping supply.

BRIDGING THE SUPPLY AND DEMAND GAP

Greater Manchester is feeling the impact of the broader UK housing crisis, with supply failing to keep pace with the demand from a growing population. Rental prices are on the rise and, despite being on a level plateau for the last few years, house prices are now also starting to increase. Occupancy rates are also increasing; the steady downward trend that has been going for decades is now bottoming out and there is a reversal in the number of people occupying properties.

The Greater Manchester Spatial Framework has identified a need for approximately 11,500 new homes a year to meet demand, with recent calculations showing that only 0.4% of the city's housing stock is available to rent or buy. This equates to just 85 properties in total.

With over 8,000 units for housing currently being built within Manchester's inner ring road, the question now falls on whether this could result in over-supply. The counter argument is that demand has built up to such an extent that we now need to meet a massive latent demand for new housing over the upcoming years, as well as ensuring that there is a pipeline of development to satisfy future growth. In the past, it has also been the outer suburbs of Greater Manchester where the mainstay of new housing has trickled through, versus city centre development.

LAYING THE FOUNDATIONS FOR DEVELOPMENT

The Greater Manchester Spatial Framework (GMSF) has been developed as a joint plan to ensure that there is the right land in the right places to deliver the homes needed up to 2035. Approximately 75% of those sites identified for residential development across the conurbation are brownfield, and the challenge now is how to turn these sites into an attractive proposition to take forward. Inevitably, this is likely to involve an element of public money to remediate the site and put in the required infrastructure. The strategy has therefore been to identify large sites which can accommodate an extra five to ten thousand houses.

Placemaking is the biggest single most important thing when it comes to creating development opportunities and identifying land for development across the city. In essence it means adopting a multi-faceted approach to the planning, design and management of sites, and encouraging collaboration of those disciplines involved in creating the end product, including investors.

One significant partnership set up under this type of arrangement is Manchester Life, where a large investment partner from the Middle East has entered into a joint venture with Manchester County Council to build up to 1,000 units on site. A similar methodology is also being applied to the Northern Gateway which has the capacity for up to ten thousand new homes.

LAYING THE FOUNDATIONS FOR DEVELOPMENT (CONTINUED)

The role of pension funds in funding developments now and in the future should also not be underestimated, and to this end Manchester City Council has partnered with a pension fund on a joint development, Matrix Homes.

Manchester City Council is also working alongside the city's 26 registered housing providers. As well as collectively developing a memorandum of understanding, perhaps of most importance is the group's collaborative approach to bringing forward residential developments in a programmed way across a series of different sites.

MERITS OF MODULAR CONSTRUCTION

Modular construction has long been voiced as a potential solution to the UK's housing supply crisis, to help overcome issues around shortages in skilled labour and materials to build. Looking into how this could work in practice, Manchester City Council collaborated with other developers to share in their learning experiences with this type of construction. Each committed to building 500 sites through individual development programmes across Greater Manchester and Liverpool. The Council also entered into a knowledge transfer partnership with Salford University for the purpose of market testing and market surveying.

One of the key challenges that has arisen through this work, is not around the manufacturing but around how you get the product on site efficiently. Part of the issue is the disconnect between the manufacturer and the organisation doing the ground work. In the absence of an end-to-end process in place this has given rise to costs which far exceed the cost of a traditional build site. It is hoped that government's recent rhetoric about the role of off-site modular housing in meeting the UK's housing shortage will drive increased investment into the sector to overcome this hurdle.

From a local authority perspective, a significant issue around modular construction comes down to the risk involved, brought about by the limited sight of the end product working in practice. Scepticism remains around lower life cycle costs and lower maintenance associated with a factory build, and there needs to be real evidence that this is a better and superior product if we're going to get buy-in from the whole industry.

There also needs to be a more joined up approach which is consistent across the country as a whole. For example, road use rules for transporting heavy goods vary between the different local authorities. If we are going to be successful at meeting the government's ambitious housing targets, some of the softer issues that can make all the difference between the success or failure of an individual project need to be addressed as part of a wider conversation.

CONCLUSION

There is a requirement to build an extra 5,000 homes in Greater Manchester alone, above and beyond the figures that are already being achieved. The question therefore boils down to who is going to build them and how. Building on the successes of Manchester City Council's partnerships with investors, the next step is to have similar partnerships with those disciplines involved in delivering the final product. Only by doing this will we have the ability to create a pipeline of development to meet supply, with the requisite placemaking and onsite delivery and assembly.

There is a long way to go and a lot of work still left to do. However, it is testament to the strength of the proposition of modular construction that we are still here, and there is no doubt that we are on the cusp of a product that can deliver the numbers of homes needed to meet growing demand.

“THE FUTURE OF THE INDUSTRY IS PLAGUED WITH UNCERTAINTY; SKILLED TRADESPEOPLE ARE RETIRING AT AN ALARMING RATE. . .”

London 18 May, 2017
Guest speaker **Richard Saxon CBE** presented:

"An industry in crisis, showing little sign of alleviation in the near future"

EXECUTIVE SUMMARY

The London housing market is feeling the brunt of skilled labour shortages in the construction industry, in the absence of a much needed government push towards research, development, and training. In comparison to other countries such as Japan, the UK is lagging far behind.

Kim Vernau, CEO, BLP Insurance, highlights the key points raised at an interactive discussion organised for industry peers on off-site construction as the solution to an industry in crisis. Guest speaker and Non-Executive Director, Richard Saxon, provided a reality check into how skills and innovation gaps in the UK are limiting progress and why a top-to-bottom shake up is required if there is going to be any sign of a recovery.

THE CONSTRUCTION CONUNDRUM

Mark Farmer's recent report, Construction labour market in the UK: Farmer review, subtitled 'Modernise or Die', portrays an industry in drastic need of change. This is not dramatic language, but an accurate reflection of the current and seismic ills of the UK construction sector.

The future of the industry is plagued with uncertainty; skilled tradespeople are retiring at an alarming rate, falling numbers of graduates are joining the industry and apprenticeship levels are significantly below the required threshold. Moves towards Brexit could add to our woes, with a significant proportion of skilled tradespeople previously coming from the EU. The self-inflicted wound is only getting deeper.

It is no secret that construction quality is also on the decline, with increasing attention being given to the availability of new build properties that are fit for purpose. Off-site construction has been voiced as a viable solution, but a key problem lies in the relatively unproductive nature of the UK construction sector. While other UK industries have witnessed exponential productivity gains, construction productivity has remained unchanged over the past 30 years. We're also lagging behind an international level, with Germany and France on average producing in four days what the UK can in five.

THE ARGUMENT FOR OFF-SITE CONSTRUCTION

Increasing capacity through the addition of machines to the current workforce will help to compensate for shortages of labour. Furthermore, factories can provide a steadier work culture in a fixed location that is not exposed to unpredictable weather, often a deterrent for people coming into the industry.

Embracing off-site manufacturing will also help the industry to improve its image. The construction industry is oft maligned for its poor safety record and lack of focus on sustainable production. Off-site construction is inherently safer than its onsite equivalent, with work carried out in a more controlled and systematic manner.

THE ARGUMENT FOR OFF-SITE CONSTRUCTION (CONTINUED)

Adoption of digital innovation will be fundamental to the success of off-site construction, as a key component of more efficient, effective and timelier production. The role of digital in the design process is also an attractive proposition for millennials and younger generations to join the industry. As the process of electronic tagging develops, components can increasingly be built robotically, meaning that operating and maintaining buildings can be done in a much more sophisticated way. Looking back in 20 or 30 years' time, we will say that this was the decade in which everything changed. A rising proportion of buildings are already being pre-fabricated. Even traditional built housing is now typically made up of around 10-15% off-site content, and construction products (other than raw materials) are making up an increasing part of specifications. However, there is still a long way to go and the threat of industry-wide failure unless significant work is undertaken.

THE MANAGEMENT OF OFF-SITE CONSTRUCTION IS A WHOLE NEW BALL GAME

Evidence suggests that specialist firms involved in making off-site components are just as prone to suffering business failure as traditional building firms. Costs are largely the problem; these are usually higher because of the initial capital requirement and the inability to guarantee full utilisation of factory capacity.

Supply chains also remain desperately fragmented and the onsite assembly of the parts is fraught with difficulties and risk of damage. The logistics of off-site construction is a whole new ball game and the skills are just not there. The Construction Industry Training Board (CITB) recently published a report called "Faster, smarter, more efficient – building skill for off-site construction", with a daunting list of the skills required. The problem is that off-site doesn't resolve the skills problem, it just simply starts a new list.

SURVIVAL BOILS DOWN TO CASH FLOW

As a low-capital-intensity industry, the survival of construction firms has always been dependent on cash flow. Overcapacity keeps margins low, allowing small privately held firms to prosper in this environment because of a healthy return on modest investment. The problem arises when firms are unable to afford costly training or research and development. Innovation subsequently pays the price as businesses simply don't have the margins.

Construction suffers more so than any other industry from exaggerated business cycles. Efforts to alleviate the pressures through subcontracting only further depresses capacity, shuts down training, and pushes research and development to the back of the queue. With cycles coming round roughly every eight years, the next cycle could be fast approaching. This doesn't fit in well with factory-based high capital off-site construction. There are tens of millions at stake to create the capacity to build, and then it can't be utilised because the demand simply isn't there.

BEHIND THE INTERNATIONAL CURVE

Off-site construction is miles ahead in other regions. One example is Toyota's housebuilding industry in Japan, where a million houses are built a year in a country with a population twice the size of the UK. Instead of mass housebuilding, it operates an individual house replacement model which is aligned to Japanese homeownership patterns. Typically, a mortgage will be taken out on a plot of land rather than the house and when the building reaches 20 to 30 years old it is replaced.

The UK is the absolute opposite; we spend half of our housing construction spend on fixing up old properties seen as more attractive and as holding more value. This is the British way of housebuilding, although the properties are increasingly being built with largely pre-fabricated off-the-shelf elements.

BEHIND THE INTERNATIONAL CURVE (CONTINUED)

We need to change and evolve our methods and rationale if we're going to achieve a more forward thinking, modern and efficient way of building. For real progress to occur it is vital that the industry becomes more integrated and the fragmentation of hundreds of thousands of construction firms needs to reduce. Toyota benefits from knowing exactly who is going to provide every component in a new build house so that production lines can flow at an optimal pace. They don't believe in competition, they believe in relationships. The result is a long and reliable supply chain with the capacity to keep innovating.

REACHING A CONSTRUCTION TIPPING POINT

Government intervention is needed to respond to the fundamental market failure in the construction industry, whereby it is continuously reacting in an exaggerated manner to economic cycles. At a national level, the public sector should be buying buildings during those periods when nobody else is, rather than adding to peaks in demand by subsidising purchasing power as has recently been the case.

The public sector also needs to support research and development, alleviating the cost for firms to innovate which otherwise makes them less competitive. The Japanese government's model is to allocate research and development jobs to major construction firms and then share findings across the industry.

Training around the implementation of digital working methods is also essential. We also need building regulations that recognise off-site construction and give 'type approvals' and planning approvals available earlier in the process.

THE ROLE FOR BUILD TO RENT

One ray of hope is the institutionally funded Build to Rent sector. This has been a significant hole in our market ever since World War 2, but finally the government's Housing White Paper has recognised the importance of its role in helping to overcome the UK housing shortage by building fit-for-purpose properties for people not in a position to own a home.

The rise of Build to Rent means that even if the build for sale market is depressed, providers will still buy sites in a timely manner, without waiting for sales. It's a complete change of mindset for housebuilders, and one which suits factory manufacturers' style of speed, quality and reliability. Larger developments are also better to build and run, creating a completely different housebuilding model which fits with the off-site proposition.

CONCLUSION

Moving towards digitally driven operational models and off-site construction is increasingly being seen as a cure to the UK construction industry, increasingly struggling under a lack of investment, weak order books, poor recruitment and training and the inevitable impact of Brexit.

While its merits are clear for all to see in theory, such a dramatic shift in the way we build will be a long time coming. A complete shake up of the industry is required, involving not just methodologies to be used and the more rapid assimilation of technology into the design and manufacturing processes, but also essential consolidation and integration across the supply chain. A long and rocky ride lies ahead.

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BLP lunches are part of the **Thought Leadership** programme conducted by BLP in 2016/17.

The next series of lunches will commence in the autumn of 2017 if you would be interested in attending please contact **Adrian.Stahl@blpinsurance.com**.

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