

# CEO Forum Roundtable

## Off-Site Manufacture - can it make a difference?

Hosted by Willmott Dixon  
Location Nottingham  
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A number of factors have seen off-site manufacture of homes and MMC in general rise up the political agenda. In particular, these include the need to increase capacity and quality at a time when the resources available on-site are in short supply.

This round table discussion considered the experience both nationally and specifically as it relates to the East Midlands.

### Introduction

Following a welcome from Stephen Corbett of Willmott Dixon, Shelagh Grant, Chief Executive of The Housing Forum, opened the discussion. Shelagh explained the role The Housing Forum has taken over the years to promote innovation in housing and construction.

**There are many would-be new entrants, but not all able to meet the standards required by warranty providers**

**Richard Lankshear, Innovation Manager, NHBC**

There is a surge in interest in MMC, driven in part by Government Policy as detailed in the Housing White Paper and supported by the MHCLG report “Modernise or Die” and more recently the Homes England Strategic Plan (published this month). Coupled with the well-publicised shortage of skilled labour in the housing market, house builders are investigating different ways of building.

NHBC have seen a significant growth in the number of systems that are submitted for review.



Image of off-site manufacture, courtesy of Willmott Dixon: [www.willmottdixon.co.uk](http://www.willmottdixon.co.uk)

Their Standards, Innovation and Research department reviews innovative and non-conventional construction methods to determine if they can be accepted by NHBC for warranty. Typically, they would expect to review between 4 and 6 new systems each year, submitted by builders that are exploring different methods of construction. However, 2016, saw a significant uptick with nearly 30 new systems submitted. This trend has continued and in 2018 they have received over 40 new systems to review to date.

The types of MMC system seen are varied, covering all construction materials (CLT, timber frame, light steel frame, precast concrete, Aerated concrete, hot rolled steel and occasionally real innovation such as 3D printing and Glass fibre reinforced materials).

There has also been a change in the types of MMC submitted for review.

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Whereas 2 years ago there were a lot of on-site MMC systems (such as insulated concrete formwork / thin bed mortar blocks) as well as panelised systems. Recently the shift has been towards whole house volumetric systems that are naturally more complex.

The wide variety of different models and construction methods - indeed the fragmented nature of the off-site industry, is demonstrated in the NHBC Foundation's report recently published "*Modern Methods of Construction - Who's doing what*". NHBC appointed Cast Consultancy to carry out research for the industry and this reflected the growing intentions for greater use of off-site construction.

However, NHBC's rate of acceptance of these systems is not increasing. Why not? This is partly due to resources and they are investing to support this growing demand. But the main reason is because many systems fail to demonstrate that they meet the NHBC standards. Typically, they see three common areas of concern:

- Insufficient appreciation of the complexity of the construction details that need to be considered with off-site manufacture. Here, NHBC expect manufacturers to take design responsibility of interfaces with onsite activity. They need to advise builders how their product works on site.
- Early design freeze and the changes to procurement it brings. The specification of components and proof of their performance needs to be fully demonstrated before manufacture begins.
- Factory production controls. The biggest risk in off-site manufacture is the risk of systemic defects so an audited, approved Quality Management System is required. It is extraordinary that we as an industry are expecting higher quality buildings using MMC, built in factories with no accredited QMS.

NHBC is geared to support the industry as we move to diversify the forms of house building. But while supporting innovation, it must be responsible innovation in that the proposed performance is tested and proven before being used on site. We can't have homeowners as guinea pigs for innovative technologies - the experience of PRC homes, the Canadian Condominium Crisis and similar events in New Zealand and the USA cannot be repeated.

So we look to those that procure MMC for their projects to ensure that they carry out due diligence on the systems proposed and as a starting point, check the NHBC MMC hub for a list of accepted systems.

#### Discussion

Housing Providers are keen to adopt off-site, but where they are likely to be for private sale or where they plan to charge properties against their loans, then NHBC (or other) warranty and the ability to insure is key. They are not yet convinced that efficiency available for the low volumes HAs can buy at. There are a lot of organisations selling the systems at trade shows and conferences, but it seems some of this is premature.

Some of the landlords in the room, echoed the view that there was an interest amongst them for MMC and that they were regularly contacted by new entrants, but there were still issues over the cost of modular (in particular) estimated at 30% above build cost, or with quality and financial viability of the off-site provider.

Even on larger sites 60 plus - where quotes for off-site options were elicited all tenders were for traditional build. An opinion was expressed that even though you do get the homes completed quicker, the rental return on affordable does not make it more viable. In this case the HA would rather wait for traditional build as it is lower cost and easier

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to get security on.

The only way to get this to work is for housing providers get together in procurement consortia and agree a specific system and a pattern book. Otherwise need to stick to traditional. There was general agreement on this. The contractor experience of the Manchester procurement consortium was that different HAs were unable to agree the standardised houses. Without all accepting a standardised product it becomes cost prohibitive. Standardisation is why it works in student accommodation, education and extra care.

Housing design tends to be more subjective and each organisation and their residents will have a view.

**To achieve the benefits of working with a manufacturer clients need to take a long term and product based view**

**Mike Fairey, Managing Director, Fusion Build**

Fusion Build have been in the off-site panellised steel market for 18 years and have worked successfully across a number of construction sectors. Over this time they and others have demonstrated that using the techniques associated with manufacturing can deliver positive results in terms of quality and cost. However the key to this succeeding is that there has to be a change of mindset for clients.

Rather than seeking solutions for a one-off project they need to consider partnership approach over time to jointly develop products that can be replicated. A small one-off project is likely to be costly and will fail to achieve the expected benefits. The principals of all manufacture apply that is to minimise design output and drive in efficiencies of scale.

We need to think in terms of what Fusion Build describe as the JeDu Principal (these letters being the difference between Project and Product). This does not require duplication, but it does need standardisation and replication. It also works best when at the outset a supply chain is prechosen and involved in the development of the product. It succeeds when the initiative is driven from the top of an organisation - and where there is early selection of designer, engineer and manufacturer.

Mike gave examples of schools delivered with Willmott Dixon in partnership. Errors and site issues now after seven years are absolutely minimal.

Major Housebuilder Persimmon have their own off-site product, Space 4, and have eight house types using offsite. Generally, there is no deviation from standardisation. But when there is then there is a one-off charge for any change made in the factory.

Mike also addressed limitations to OSM supply. There is a concern that bigger housebuilders will guarantee their own supply by buying up the capacity which may potentially cut out the RPs.

It was also stressed that there is more capacity in panelised systems than modular, but we still need volume and continuity of supply.

#### Discussion

The group picked up on Mike's point about vertical integration and agreed it is a model that works for off-site manufacture. Examples were given of L&G, Berkeley Homes and ilke. There was also concern that at this point it is vital that there isn't a major off-site failure, which would set MMC back. And any failure is likely to be a systemic fault rather than a one-off workmanship Issue. There is a need to both encourage new entrants but ensure quality.

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The CITB are aiming to attract people into this part of the industry. To some extent it is more appealing than traditional construction, but not well known or understood by schools or prospective employees. There also aren't sufficient qualifications. The emphasis for CITB is on the onsite element, which is where their remit is. CITB are working to help improve the number of people able to provide the training.

The point was made that the manufacturers challenge is training of retention of semi-skilled staff. Manufacturing operatives are paid less and liable to switch employers on the basis of hourly rate.

**There are benefits and barriers to adopting off-site solutions, but the biggest barrier to modular currently is cost**

**Mike Kay, Northampton Partnership Homes**

Mike Kay gave a perspective based on his experience of MMC since 2002 in particular of Timber frame.

With an LSVT in the South West he developed a delivery mechanism for new homes that based on collaboration from design to occupation. This involved the creation of a company called Advantage South West and the creation of a standard house type which contractors could build quickly and cost effectively.

The concept was based on the motor industry, with 3 platforms narrow, medium and wide fronted house types with standardised interiors providing cost certainty.

Timber frame, Steel frame, Concrete frame and volumetric were all considered against traditional construction. Timber frame won the day with an outturn financial position 15% cheaper than

traditional construction. Over 2000 homes have been delivered in this way.

Currently Northampton partnership Homes have on site a 45 bed sheltered scheme on site being built using a timber frame system and another scheme using light gauge steel.

**The advantages of using off-site are**

- Speed of construction considerably reduced
- Less impact on the community
- Quality is improved – provided you get it right in the factory
- Space standards are much better than traditional section 106 offers
- Cheaper than traditional – subject to adopting the right process and contractor
- Ability to have tenant involvement – likely to be a key outcome of the Housing Green Paper?
- Vernacular flexibility – can be clad and roofed in any finish

**While the barriers are:**

- Need to change mindsets
- Misconception of what they will look like
- Traditional mindsets
- Need to be innovative
- Cost, if you don't design for MMC from day one it will be more expensive.
- Volume and long term commitment is essential – not everyone can commit to large volumes of long term pipeline
- Clients not clearly understanding manufacturing principles and asking for one off designs

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- Clients not committing to a design freeze pre-manufacture
- Local money being exported to other areas of the country – the factories are not everywhere and hence
- Difficulty in supporting local employment and
- Local economy
- You need a contractor who understands it

**We seek to encourage MMC, but we can only move at the pace of the market**

Lucy Blasdale, Homes England

There is a need to improve productivity and reduce the impact of the declining workforce. From a policy point of view MMC appears to have the potential to be significantly more productive than traditional methods of construction and greatly increase the pace of delivery.

Homes England support pilot projects on Homes England land and encourages partners to use MMC through provision of development finance to developers. But it can only move at the speed of the industry. MMC is seen as a response to the skills shortage. On all sites they are marketing, provision of modular is part of the tender process.

Organisations tend to propose the bare minimum. Homes England see more innovation from RSL sector than private developers. Developers usually want a different treatment where modular is included as part of a tender for disposal. Another issue is that to work effectively, off-site needs to be included as part of the initial planning application and planners' preference for diverse products modifications can add cost.

Homes England are appointing architects for master planning on larger sites with off-site experience and trying to provide and encourage a level playing field for MMC in relation to traditional build.

#### Discussion

Discussion focused on the challenge to private sales and mortgageability. Concern about the discretion of local lenders to lend, or not, against off-site systems. Government trying to get agreement between lenders, insurers and warranty providers as to a common approach.

The housing providers present, agreed to meet separately to discuss how they could work together to achieve the required volume.

#### Attending

##### HOSTS

Stephen Corbett	Principal New Business Manager (Eastern Hub) Willmott Dixon
Marcus Reeves	Pre-Construction Director Willmott Dixon
Shelagh Grant	Chief Executive The Housing Forum
Michael Cleaver	Director The Housing Forum

##### GUESTS

Marcus Lewis	Partner Baily Garner
Gillian Brewin	Partnerships Manager CITB
Cllr Tony King	Cabinet Member for Economic Development and Regeneration Derbyshire County Council
Tim Wade	Director - Delivery emh group
Mike Fairey	Managing Director Fusion Build

*Continued over...*

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Marcus Keys	Group Business Growth and Transformation Director <a href="#">Futures Housing Group</a>
Lucy Blasdale	Head of Land - Midlands <a href="#">Homes England</a>
David Stutting	Senior Land Buyer <a href="#">Longhurst Group</a>
Richard Lankshear	Innovation Manager <a href="#">NHBC</a>
Rebecca Rance	Chief Executive <a href="#">Newark and Sherwood Homes</a>
Mike Kay	Chief Executive <a href="#">Northampton Partnership Homes</a>
Nick Murphy	Chief Executive <a href="#">Nottingham City Homes</a>
Mark Lowe	Head of Regeneration <a href="#">Nottingham City Council</a>
Allan Fisher	Director of Development and Assets <a href="#">Nottingham Community Housing Association</a>
Mike Siebert	PhD Candidate <a href="#">The University of Nottingham</a>
Richard Whittaker	Director of Development <a href="#">WM Housing</a>

### Membership

**The Housing Forum is the only cross-sector membership network that represents the entire housing supply chain on behalf of the housing industry.**

With a membership of 150 like-minded organisations and businesses from across the public and private sector, The Housing Forum champions collaboration and innovation in construction to improve productivity, design and build quality.

### How to join

We'd love to talk to you about the benefits of membership to your organisation.

Contact:

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For more information visit:

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