MMC and Modular
Oxford Roundtable

MORGAN SINDALL
CONSTRUCTION

Modular Construction in 2020:

Have we reached a tipping point?

The proposed rewards on offer for successfully harnessing modular construction are many: increased productivity, decreased carbon footprint, a way to address the skills shortage, and greatly increased building capacity, to name a few.

In a bid to catalyse Modern Methods of Construction (MMC) and secure these benefits, Whitehall has announced a 'presumption' in favour of offsite methods when running the rule over tender submissions for projects in defence, education, health and social care, justice and transport.

But presumption is not requirement. To date, only the Department for Education has embraced the agenda; commissioning multiple projects and launching its own £3 billion framework.

One factor suggested as a barrier to wider adoption in the construction industry is dismal memories of post–Second World War prefabricated houses. The precision and quality of modular buildings on offer today are a world away from those early experiments. Technology has progressed rapidly, but perceptions have been slower to evolve.

There are signs, however, that things may be beginning to change.

◆ ◆ ◆

Sizeable investments from Asian and Scandinavian-headquartered companies in UK firms have created new impetus in the modular residential market, while the current housing minister Esther McVey has doubled down on the government's support for offsite. Alongside appointing industry veteran Mark Farmer as MMC tsar, the government has invested in a housing developer and heralded the creation of "Construction Corridor" in the North East, where many modular factories are based.

Add to this a growing number of glowing case studies and anecdotes as this new era of modular buildings progress through a lifecycle, and some might argue that 2020 could be a tipping point for offsite construction.

We invited a roundtable of expert consultants and customers to discuss the factors holding modular construction back; and what they would like to see happen to support wider adoption in the industry in 2020 and beyond.

Around the table:

1. **James York** – Morgan Sindall Construction
2. **Kevin Kerr** – Morgan Sindall Construction
3. **Crissie Gizzi** – Morgan Sindall Construction
4. **Jonathan Daly** – Influential PR
5. **Liz Clutterbrook** – Oxford County Council
6. **James Stone** – RPS
7. **Oliver Bannister** – Ridge & Partners
8. **Rob Webb** – Briggs & Forrester
9. **Gary Souch** - Gleeds
10. **Fran Cox** – Lungfish Architects
11. **Richard Valentine-Selsey** – Savills (research division)
12. **Paul Mills** – Solid Structures
13. **Natasha Brammer** - Oxford County Council

The discussion opened with debate about the various logistical challenges and capacity issues that modular projects had to overcome.

One consultant said: "Working on residential schemes in London, we experienced problems sequencing the manufacture and getting units to the site on time. We had issues securing the temporary road closures which were critical to the delivery of the units."

"There was a three-month delay and a standstill with stock stuck in the factory. This impacted on other schemes depending on that facility."

Another at the table agreed that a lack of capacity was one of the main limiting factors: "The capacity in the industry is the key underlying bottleneck. Manufacturers just aren't geared up to cope with everything they're being asked to do. Delays and logistical problems drive the cost up, and the pricing element of offsite versus traditional is a fine line. To encourage customers to buy into it, we need to be driving cost down, not up," they said.

Expanding on this, an attendee added: "On the residential side we're seeing a disconnect between the people who are doing the groundworks and making the site ready, and the manufacturer who just expects to come and drop in units."

"Without proper coordination, timescales rarely match up. Factory-line scheduling rarely applies to real-world conditions in and around a site."

Echoing that point a consultant said: "We've started to see manufacturers attempt to go direct to the customer offering a turn-key solution, but situations, like you've highlighted, are all too common. Some manufacturers are getting better, but the reality is project management and design management skills are critical. Main contractors have been doing that for years and it's not so easy for a manufacturer to put things right when they go wrong."

Nearly all at the table predicted increased investment in proprietary modular facilities by main contractors:

"We need more contractors investing in manufacturing facilities. Years ago, many set up their own concrete building plants to help speed up delivery. The same investment now needs to happen in offsite,"

said a consultant.

Another noted:

"It won't achieve the scale at the pace we need if we wait for the modular firms to grow naturally. As the larger main contractors embrace it more wholeheartedly, we need them to take the risk and put up the investment to catalyse MMC capacity."

There were universal calls for more factories to be built and few could see any reason why the trend of basing them predominantly in the north should change.

One expert said: "There's no issue with the majority of manufacturing being based up north. Transporting the units isn't cost prohibitive. Land and commercial property are cheaper there too. There's loads of regular construction work down here, why not provide work to the industry in the North East where there are fewer projects on-site?"

"It can also deal with some of the skills shortages down south by moving the work to the north."

Someone else at the table suggested that modular construction could help to address unemployment in areas which previously relied on other manufacturing industries:

"The North East has historical strengths in the automotive industry. Some of the people who previously worked in that sector have crossed over and are now working in the MMC space. There are obvious transferable skills – and physical facilities too."

The idea that modular construction was that similar to other manufacturing specialisms was challenged by another expert who said:

"For a lot of modular construction I'd use the term manufacturing loosely. The majority isn't automated – it's the same people who'd otherwise be outside, doing the work indoors. It's the same subcontractors."

"You need to have some equipment, yes, but most modular facilities are intrinsically pretty basic. You've got timber and metal frames, and they're assembled exactly how they would be on-site – just it's done with a roof overhead."

One attendee raised an interesting point about potentially conflicting government agendas:

"A potential issue with basing all of the factories in the North is hitting local spend KPIs. If the government wants the industry to continue to drive spend into supply chains within a tight radius of a site, while also pushing modular, which largely gets built in a pocket of the north they'll have a bit of dilemma. There will need to be a degree of flexibility."

The conversation stayed with government intervention in the sector, with an overwhelming consensus that mandating modular was a step too far:

"Regulation and mandating modular as they do in other countries would be a mistake. Homes England, for example, haven't dictated which systems to use in the residential space – and that's a positive thing."

"They have built a scoring mechanism which encourages you to use modular where you can, but it's open to the market to decide what the right system for the site is. The market has to dictate it – because the market has to deliver it."

Seconding that another attendee said: "As an industry, we need to be looking at a project's value drivers and then selecting modular on those – not the other way round. Modular, for the sake of modular, is a mistake. But the government is at risk of doing that by pushing it at every scenario. They want 80 per cent off site eventually."

Another commented: "Why is the government pushing modular so much? Because consultants are telling them they can eliminate much of construction inefficiency by driving the sector towards behaving like automotive manufacture. But you're not seeing the benefits in the cost yet – and it's not that simple."

There was widespread agreement that education was one sector embracing offsite.

Another agreed: "As an industry we need better and earlier collaboration between everyone in the design process. We should have one design that everyone agrees on from day one. Modular really lends itself to this: invest the time early on and you have a design that can be replicated with comparative ease to traditional methods."

A consultant said:
"The Department of Education and Education Funding Agency fund the majority of the education projects in the country. If you're paying, you can specify whatever you like. So they'll almost certainly mandate that their frameworks are used and offsite is prioritised."

They continued: "But modular isn't always cheaper. Spot purchasing invariably works out to be more expensive. It's cost-effective when there are large, multi-year programmes of work which lock down the price at the initial stage and you have early engagement from everyone involved."

While funding was one driver behind education's adoption of offsite methods, attendees also discussed the speed and logistical benefits as factors.

"We've delivered a school in 50 weeks from phone call to handover – so incredibly quick. And it needed to be because of the urgency of the brief. That was only possible due to using modular construction."

Another at the table echoed the logistical benefits: "We had a situation where a 1FE school was due to be delivered within the summer holiday period. It was doable – just – with offsite: 12 weeks on site but all the modules pre-delivered during a six-week period."

"We weren't allowed to deliver units during the school day but we worked with the manufacturer to fly them in outside of those hours. Modular is a great option when you've got a three-line whip on delivery timescales and hours of operation."

"As schools expand, the ability to build on additional modular elements with comparative ease is also going to be a real strength."

As an early adopter, education had a key role to play in providing the case studies for other sectors, one person suggested:

"We're starting to see some impressive larger education schemes delivered through offsite. We need to be shouting about their success and doing all we can to banish dated views of modular."

The discussion drew to a close with a focus on the potential for modular to help the industry address its sustainability challenges:

"A big driver for local authorities is zero carbon by 2030 – so if modular can help deliver that it could be a big selling point. But early engagement to assess the impact that a zero-carbon commitment will have on the entire scheme is crucial," **said one attendee.**

Another added: "At the end of a life cycle of a modular building, can you reuse about half of the structure. You'd lose the M&E, but the rest is far easier to repurpose than with a traditional build. We've not gone through a life cycle of many of these schemes, but that's likely to become more apparent and circular economy principles are a real USP."

MORGAN SINDALL
CONSTRUCTION

Key Points
from this discussion

1. **Engage early**
   Manufacturers, main contractors, supply chain and customers need to collaborate early in the design process. Adopting a retrofit strategy, and asking architects to 'modularise this', seldom works.

2. **Manufacturers aren't project managers**
   Factory conditions don't translate seamlessly to construction sites. Turn-key solutions that aim to cut out consultants and main contractors rarely go smoothly.

3. **Drive down cost through batching**
   Spot purchasing remains expensive. Offsite becomes cost-effective when multi-year programmes of work are secured.

4. **Fit for purpose**
   Don't push modular for the sake of modular. Let a project's value drivers, and the market, dictate the construction method.

5. **Celebrate success**
   Celebrate successful case studies of this new generation of modular buildings to banish historic poor perceptions.

6. **Zero Carbon**
   Consult on the carbon strategy from day one. Build circular economy principles into the design.

7. **Design with future in mind**
   In education especially, modular should be designed with future expansion in mind, to enable an agile response to population increases.

Everyone agreed that embodied carbon was going to become a much bigger focus for the industry and offsite construction had the potential to deliver real savings here.

One expert noted: "Our carbon footprint during the build process is rightly going to come under more scrutiny. With modular, once you're actually on site, emissions traffic is dramatically reduced. It's all done offsite in one factory. There's no subcontractor traffic."