

Housing, Communities and Local Government Committee

Oral evidence: Modern methods of construction, HC 1831

Monday 18 March 2019

Ordered by the House of Commons to be published on 18 March 2019.

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Members present: Mr Clive Betts (Chair); Mr Tanmanjeet Singh Dhesi; Helen Hayes; Andrew Lewer; Teresa Pearce; Mr Mark Prisk; Mary Robinson; Liz Twist.

Questions 65 - 135

Witnesses

I: Steven Boyes, Chief Operating Officer and Deputy Chief Executive, Barratt Developments; James Thomson, Non-Executive Director and former Chief Executive, Keepmoat Homes; Alun Macey, Head of Construction, Pocket Living; Jennie Daly, Director, Group Operations, Taylor Wimpey.

II: Lord Porter of Spalding CBE, Chairman, Local Government Association; Wayne Hill, Director, Construction Services, L&Q Group; Trina Chakravarti, Project Director, Building Better, National Housing Federation.

Examination of Witnesses

Witnesses: Steven Boyes, James Thomson, Alun Macey and Jennie Daly.

Chair: Thank you very much for coming to the Committee this afternoon. Welcome to our evidence session on modern methods of construction. I will begin by asking members of the Committee to put on record any particular interests they have that may be relevant to this inquiry. I am a vice-president of the Local Government Association.

Teresa Pearce: It is as per my register of interests, but I also employ two councillors in my office.

Liz Twist: I employ a councillor in my office.

Helen Hayes: I employ a councillor in my team and I am also a vice-president of the Local Government Association.

Chair: You are no longer a councillor, I understand. You have given up that responsibility.



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Andrew Lewer: I am a vice-president of the LGA, as well as per my register of interests.

Mr Prisk: I am a fellow of the Royal Institution of Chartered Surveyors.

Q65 **Chair:** Thank you very much for coming to give evidence to the Committee this afternoon. Could you go round the table and say who you are and the organisation you are representing today?

Steven Boyes: Good afternoon. I am Steven Boyes, chief operating officer and deputy chief executive of Barratt Developments Plc.

James Thomson: I am James Thomson, non-executive director of Keepmoat Homes and until recently its chief executive officer.

Jennie Daly: Good afternoon. I am Jennie Daly, group operations director of Taylor Wimpey.

Alun Macey: Good afternoon. My name is Alun Macey. I am head of construction for Pocket Living.

Q66 **Chair:** Thank you very much for coming. To begin with, the term “modern methods of construction” covers a multitude of different approaches to building homes. Could you say, each of you, what particular sorts of MMC and what particular designs you have used in your business so far?

Steven Boyes: From a Barratt perspective, we have used volumetric construction and pods going back a number of years, but more recently we are using superstructure substitution-type frames and panellised concrete construction. We are using a wide range of timber frames, light-gauge steel frames and panellised concrete.

James Thomson: At Keepmoat Homes we really use two products, in terms of modular construction. The first is perhaps slightly more adopted by the industry, which is timber frame. About 8%¹ of our production, some 500 homes a year, will be built by timber frame in Scotland and the south of England, and then more recently we have a partnership with Ilke Homes, which builds volumetric homes entirely in the factory. This year to March, we will have delivered about 50 homes using Ilke Homes, and in the next 12 months about 350 of those, so in total about 20% of our production next year will be using modern methods of construction.

Jennie Daly: Taylor Wimpey has predominantly used timber frame in most recent years, and last year we built about 10% of our completions in timber frame. We also use a significant amount of what would be termed sub-assembly or componentisation. About 90% of our homes include some element of MMC componentisation. We have also undertaken a number of trials and we have a Project 2020, which we commenced in 2016, where we looked at advanced timber frame,

¹ The witness has confirmed that the correct figure is 12%



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closed-panel systems. We have also trialled CLT and we are currently in trial on a large-format block process, so a large structural panel.

Alun Macey: At Pocket Living, we use volumetric modular construction. We have been delivering schemes with modular since the summer of 2016. We have brought 200 affordable homes to market in that way. We have 265 currently in construction. Previously, 30% of our schemes were being delivered by modular, but we are gradually scaling up. Currently it is about 50%, and over the coming years you will see that scaling up to 70%.

Q67 **Chair:** I suppose one of the challenges is what we call MMC. Are timber-framed houses really MMC or are they just another way of constructing the frame of a traditionally built house?

Jennie Daly: That is a valid question. Timber frame has not been consistently used and more recently the techniques, and timber frame's limitations and benefits, have become more widely understood. I would say that in Scotland, for example, they are predominantly timber frame for Taylor Wimpey, and that made up about two-thirds of our construction of timber frame. In recent years, we have been trying to improve the understanding and the adoption of timber frame in England and Wales, where that technology is not as well understood and we have had to invest in considerable training and investment, in order to ensure that our trades and subcontractors understand the methodology.

Steven Boyes: If I could add to Jennie's comment, we sit on the Farmer committee, which is part of the MHCLG working group. They have defined seven broad categories of MMC and timber frame falls into one of those categories.

James Thomson: Going back to your question, yes, it is, in terms of the definition, but it has been around for quite a long time. Therefore, it is a much more accepted method of construction, unlike some more modern methods of construction, such as some of the volumetric solutions, or, indeed, some of the CLT solutions and panellised systems, that you are seeing coming out of the industry.

Q68 **Chair:** Perhaps I can follow up with Mr Macey and then come on to the rest of you. You were saying that you are going to be scaling up the percentage of your building that is done through MMC. In five years' time, how do you think your business will have evolved? Perhaps I will ask the rest of the panel that as well. Do you see a similar approach to MMC, or do you see that it will go up in numbers and maybe change in type as well?

Alun Macey: That very much depends on the capacity in the supply chain. The demand for use of modular MMC will be there, but it is whether the supply chain can feed that demand. At the moment, there are few credible players and providers of modular construction, for example, in the residential sector. There are few emerging. I would say



that there are a lot of modular providers operating in other sectors, like infrastructure, education and leisure, but sometimes coming into the residential sector can be perceived as slightly more high risk. There are a few extra hurdles that they need to jump through. If those hurdles can be jumped over, so to speak, it means that we will have more providers of modular in the sector and then we will be able to scale up. At the moment, we continue to challenge and collaborate with those in the supply chain, such that they can get more comfortable with coming into the residential sector and working with us.

Steven Boyes: From a Barratt perspective, last year the group produced 17,500 units, 19% of which used MMC. We gave a commitment three years ago to increase MMC to 20% by 2020. We are well on course to deliver that. We should hit that during our year to June 2019, so we would expect to increase levels of MMC further in the next three to five years. We recognise that we need to increase volumes in the industry. We will not be able to do it using traditional skills, so the only way we will be able to achieve that is by using more MMC.

James Thomson: We are at about 20% MMC, if you include timber frame. As we go forward, I see that proportion increasing, provided the industry remains on track to hit Government targets by the mid-2020s. The supply chain is constrained and, therefore, that additional volume, to a large extent, will have to come from greater use of modular construction. Indeed, as we get greater volume in the industry, that will drive down cost, which will improve take-up as well.

The other unknown around that is a greater presumption of Government seeking its use in schemes coming out through Homes England, for instance, that require modern methods of construction or, indeed, adoption by some local planning policies, as we are beginning to see as well.

Jennie Daly: I can probably agree with most of the other panellists. We are seeking to diversify our construction methods. Timber frame is, for us, one of the most accessible ways of seeking to do that. We have also set a target of 20% of our output by 2020 for timber frame. I would say that we are also then exploring other opportunities, but there is fragility in the supply chain and we can see that the capacities are restrained, as are some of the new skills that are needed to deliver MMC.

Q69 **Chair:** Finally from me, I will just pick up on that point. You were saying you are trialling various options. Are some things going to come on the scene that we have perhaps not even seen developed onsite at this stage? We talked to Mr Farmer last time about 3D printing. He thought that might be a little way off, but are there things like that that we probably are not aware of onsite, but will become available in the next few years, that you are beginning to look at?

Jennie Daly: At the moment, there is quite a broad spectrum of methodologies. To an extent that is a good thing, but it is also a



challenge. It is very difficult for any of us to credibly trial the broad spectrum of methodologies that are available. Accreditations, collaborating with peers and sharing learning will speed that. That fragility of supply chain and ensuring that those credible methodologies have the space to grow is something for us to watch.

James Thomson: I think we will see some greater use of technology or automation in the industry when it comes to modular. If I think about the existing operations that are looking at volumetric and panellised, some of those are still very labour intensive and are still at quite early stages of development. If I think about the steel-frame solution that we use, a lot of that is hand assembly of chassis and panels. I could see some degree of automation coming in. From that perspective, I can see things changing. I am not sure I can see things going quite as far as, shall we say, 3D printing. Arguably there may be some automatic bricklaying on straight walls, but even that is quite a long way off.

Steven Boyes: From a Barratt perspective, we are trialling a breadth of technologies. I have mentioned using timber frame and light-gauge steel frame, but we are also trialling a concrete panellised system, which we are bringing in from Germany with one of our strategic partners. We are also looking at reinforced concrete pre-insulated panels as well.

Alun Macey: There are not necessarily any products on the verge of coming out that you are not already aware of. I would say that it is more likely that innovation will be focused on the manufacture of the ones we already understand. For example, when making modules in modular construction, a lot of people are still trying to get clear on what approach they want to take. Do they want to be highly automated and use high technology, or do they want to take a pure assembly approach? Maybe you will start to see more consistency in the way that people approach the production of these different forms of MMC, rather than there being brand new types of MMC coming through.

Q70 **Mr Prisk:** Mr Macey, you said earlier that 2016 was when Pocket Living took on MMC. I would be interested to know the response from the others. More fundamentally, why did each of you as businesses embrace MMC and what do you see as the advantage? What are the benefits for you as businesses? Perhaps we will start with Mr Macey.

Alun Macey: We are fortunate in the way that we have designed a product that aligns very well with modular construction. I will come to that in a minute, but equally we are very squeezed in its direction by the supply chain. When the market was really hot, engaging with traditional contractors and getting competitive pricing was very difficult, so that is why it was very helpful that the team developed a product that aligned with modular construction.

We have a very repeatable product. We build compact, affordable one-bedroom apartments for first-time buyers in London, and that apartment splits into two modules of approximately 6.5 metres by 3.5



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metres. They sit end on end on a wagon and they go to a construction site. It is the repetition, and the fact that we do not change the configuration or the specification, that gives us efficiencies in production. That is why it works well for modular.

The main benefit we have seen from utilising it is faster build durations. We have completed four schemes now via modular, and we have two in construction, and we are seeing 30% betterment on build duration on those. There are other benefits. You have a platform for enhanced quality, and we see more quality coming from modular providers, but we are fortunate in the fact that we engage some traditional contractors that equally provide good quality. If you had a standing start, and you were doing traditional construction on a construction site and modular in a factory, you should generate better quality out of a factory. The working conditions are far more conducive.

The other thing is that the impact on the local environment and the borough is reduced with modular. We are there for less time. Construction traffic is less and noise is less. There are other things that are written, in terms of reduced cost. We have never seen a commercial benefit from using modular and that is mainly because there is not enough competition in the supply chain to competitively price and drive those costs down, but the benefits that we are seeing in the other three things that I have mentioned are enough for us to continue to embrace it.

Jennie Daly: We see that MMC, when designed and executed well, can benefit the consistency and quality, because of the factory-controlled production. It can have other benefits, like reduced waste, which combined with speed of erection can improve overall quality and faster build times.

As a housebuilder for sale, we need to align faster build times with the ability for the market to absorb. Therefore, we have seen those who build into the build-to-rent sector, or housing associations, where absorption is not necessarily a market issue, embracing some methodologies of MMC a little more quickly.

For Taylor Wimpey, as I said, MMC is about diversification of our build method, looking at it alongside potential skills restraint. Some forms of MCC can take certain trades, if not remove them, and move them into the factory. It can take them off the critical path, which can assist us with friction in programmes and friction in availability.

We have been as a business using elements of MMC for quite some time. As I mentioned, the economic constraints with some MCC mean that it has not survived well in times of constraints. The last downturn, for example, saw a considerable contraction in the use of timber frame and issues within that supply chain. Therefore, the economics of delivery are important. Traditional build will always remain very important and the dominant element, because it has much more flexibility for different



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speeds and programmes of build, but MMC has a sound place for certain types of build and for sites where there is high demand.

Q71 Andrew Lewer: Could I just pick up that point about absorption? I wonder if you could unpack it slightly for me, given that we are constantly hearing evidence and saying in this Committee that there is a lot more demand than supply in the housing market. We have had discussions about why that has not been fulfilled, due to planning or what have you. Are you saying that that is not the case, or is this absorption point a bit different? Are you deliberating holding back on supply in order to keep the price up?

Jennie Daly: The first thing I can confirm is that we are absolutely not holding back on production in order to effect changes in pricing. We build right across the UK. We have sites from the north of Scotland to Cornwall. They do not all have the same market depth. There will be sites, for example in the south-east and the southern counties, where demand is high, and it may be that the rate of build for MMC will be well matched there. There are other sites in some locations where there is not that level of demand, so building more quickly is not any more efficient. In fact, it can be an additional burden on viability.

We need to mix and match. Traditional build will not be excluded by MMC. MMC will not be the answer for everything, but there will be some sites that will suit the technology better. It is probably also worth overlaying at this point that some types of MMC are just not suited to certain sites, whether it is topography or accessibility. They generally need articulated vehicles to deliver. They may need craneage. There are other restrictions in some instances, such as health and safety, where, even if there was a level of demand and a desire to execute an MMC build, it would be constrained and a traditional route would be more appropriate for a raft of other reasons.

James Thomson: Keepmoat Homes has been using timber frame for a long time. However, we saw about three or four years ago significant skills shortage and supply chain pressures coming. We decided to be perhaps the first mover in exploring the volumetric market, and established a joint venture with a partner, a business called Elliott, which has experience of building modular buildings for schools and the commercial sector in factories.

Really, what we developed was a product that to all intents and purposes looks like a traditionally built home. It is of the same quality, same standard and same look, but it can be built in a factory at volume. That was really what we set out to achieve. We launched that about two years ago and signed the business off separately, because the success of Ilke will depend on having customers from a wide range of the sector—housing associations and other housebuilders, as well as us.

In terms of the benefits for us, it produces additional capacity, helping us to deliver on some of those schemes. It certainly has faster build times. A



house in the Ilke Homes factory can be built in 14 days or less and can be installed at volume within 14 days as well, so significantly reduced build times. That really helps us where there is perhaps a need to build at high output, for instance for private rented sector schemes, or for housing associations, which can cope with a higher absorption rate. We have a scheme coming through in Doncaster where we have 200 homes going to a registered provider using modular construction. Even that registered provider would not necessarily want all those homes delivered in a very short period of time.

About a third of the production we will be using for open market sale, but that is where the absorption rate becomes an issue, because we simply cannot sell at those rates. If we were to take delivery of 20 homes, we could not sell those all within a short period of time.

More broadly, it brings more skills into the sector. Again, the Ilke Homes factory employs 250 people. Two thirds of those come from outside the sector, from manufacturing, retail or other backgrounds. You are attracting a much more diverse employee base, which would not necessarily choose to do traditional construction out on site in all weathers. That is also where it helps the broader sector.

Steven Boyes: From a Barratt perspective, essentially we have been moved towards more MMC on the basis of skills shortage, particularly bricklayers. That was the principal reason we moved, in order to achieve incremental volumes.

Another reason is speed. With a good sales position, we are able to produce the units more quickly for our purchasers and give them a better experience. They do not have long to wait to move into the new house. Another area, for me, would be that it removes some of the material shortages we have all experienced in the last three to four years. It is an alternative source of materials.

Another important one for me, though, is health and safety, where there is less working at height. We have probably saved 10 weeks on our traditional build programmes by using framed construction. It also means that we have fewer people, working less time at height, where the principal health and safety risks come in, so that is another key area. We have seen a big reduction in waste on site as well, which is better from a sustainability perspective.

Q72 **Mr Prisk:** I have a couple of thoughts, one about demand, one about supply. Some people will argue that modern methods should, in theory, provide greater choice for consumers. At the moment, from some of the things you have been saying, you have quite standard products that you have been applying, but do you see it evolving in that way? Then, looking at the supply side, are there any things that are currently operating that you feel are holding you back from taking on more MMC as a proportion? Mr Thomson, I think it was you saying that you had a certain target that you were aiming for, and Mr Boyes was certainly saying so as well. Is this



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something that may prevent you from getting that growth in the proportion of your overall output that we should be aware of? Perhaps I will start at the other end again.

Steven Boyes: I think the first question was about choice for the consumer. From our perspective, that is the reason we have not used volumetric, because volumetric does restrict choice. We have used frame technology, basically so we can offer our purchaser the same house, whether it is in timber, steel or concrete frame or whether it is in masonry. We are able to offer our purchaser the same wide choice that we currently do. Barratt and David Wilson have something like 83 or 85 house types in our range and we offer the same properties, generally in the Barratt range currently, but it is important that we are able to offer a full market mix, from one bedroom right up to four and five bedrooms. That is No. 1.

The second question was about what holds us back. It is possibly constraint in supply. There is very limited supply capacity in the market. For example, we are dealing with the largest timber frame supplier in the UK. We are having to transport our frames from Aberdeen into Yorkshire and the north-west. It is 350 or 400 miles. It is the largest supplier, as I say, and it has a capacity of perhaps 8,000 units a year, which is not half of our volumes, so that is the biggest constraint. It is capacity in the market.

James Thomson: Modern methods should not limit choice and, indeed, while it is in early stages with Ilke Homes, the range of house types is comparable to the range of house types that Keepmoat Homes currently produces. I have to say, arguably, as you suggest, going forward, that it has the potential of offering more consumer choice. The long-term vision for Ilke Homes would be, when you buy a house, to be able to configure it online, much as you would configure a new car. The industry is not there yet, and at this stage it is about ensuring that we are building homes using modern methods of construction that are achieving the levels of quality that we need to, at the volume that we need to and that will drive down costs. The industry is still in the relatively early stages of that. To your point, it should not limit choice and, indeed, it will offer more choice longer term.

In terms of barriers, as a couple of other members of the panel have mentioned, modern methods are not always competitive on some particular sites. The volumetric solution works better on flatter sites than schemes that have more difficult topography. The cost for volumetric solutions and across the modular sector is at a level where it is becoming competitive, or certainly is in certain geographies. In the higher-cost areas of build, such as the south, it is much more viable. In other parts of the country, it is not yet viable. However, as volumes are achieved in the sector and the cost of production comes down, I see much greater viability across all regions, and therefore you will see greater level of volume come through.



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Jennie Daly: From Taylor Wimpey's perspective, we have not pursued volumisation for a number of reasons, one of which is that it tends to limit consumer flexibility. Additions and modifications can be difficult and there is the cost element. It is significantly more expensive and frontloaded.

We have, as I said earlier, pursued a predominantly panellised and timber frame approach. We also offer all our homes on a timber frame, as well as a standard masonry build. We do not tend to mix and match sites. A site will either be timber frame or it will be traditional build, and that is really to help with consistency of the supply chain, subcontractors and the like.

I would echo Steven's comment that our biggest constraint is in the supply chain. We too have been experiencing some constraints with our timber frame providers. We have a panel. We worked with that panel in order to deliver all of our technical drawings across our house type range a few years ago. It was a very successful exercise to establish that panel and to reach a common technical standard across all suppliers. We were pleased to work with them and we did so collaboratively, but they are starting to struggle as we seek to increase our supplies.

The other is skills. Skills, particularly with timber frame, are capable of being taught relatively quickly. We have worked with the Structural Timber Association, TRADA, the NHBC and some of our timber frame suppliers to introduce training academies. There is an education required, especially as we come down to geographies that have not utilised timber frame for quite some time. Other elements are a warranty standard and more understanding around certification and warranty within the industry.

Alun Macey: In terms of choice, there are different choices of MMC that will give you different extents of choice in your end product. We use modular because we are very repetitious in the product that we provide, and that works well for us as part of our USP. A first-time buyer buying a Pocket flat knows that, if they go to see our show flat in Sail Street or go to see one of our previous developments, that will be the same product that they buy, and that gives them a lot of comfort. It enables us to sell off plan and to bring affordable houses to market more quickly.

There is at least one modular provider who self-builds, who offers an awful lot of customisation. If you talk to them, they say it works very well for them, but for us it is about repetition and being as efficient a manufacturer as we can, so we can get as many units produced in a space of time as we can and we can get them to market more quickly.

In terms of things that are holding us back, we have already talked about capacity and the supply chain, but, equally, finance is a big thing. The whole commercial profile and cash flow around modular construction is very different. Jennie has already said that it is frontloaded, and that is true. If you use traditional construction, a contractor can do a monthly



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evaluation and whatever portion of work they have done can be valued on a measure, but a modular contractor quite often will only be able to be paid for completed modules. That means they will have spent a lot of money and will have a lot of work in progress before they can start recouping money against what they have spent. That quite often is a point of market failure and can make modular providers a bit nervous.

Another thing is that, if you want to engage in modular, you need to have a lot of units and you need repetition. If you have 80 units in a development and 10 different unit types, it is not going to be cost effective for you. Quite often, you will spend up to £100,000 just getting your product to a production line, so you really need to have a lot of units of the same type in order to start recovering that. The last thing would be comfort around mortgages, building warranties and accreditation.

Q73 Mr Prisk: Lastly in this area, the construction industry as a whole and the Government are very keen to promote BIM in civil engineering contexts, but in this context of modern methods of construction how exportable do you see that as being? Clearly, the UK market is beginning to develop and mature. Is it something that the industry would see as an exportable capability in the future?

Alun Macey: Over time, I would say certainly. At the moment, we see product coming in from eastern Europe and China. As a first principle, we should be generating more supply for our own purposes and our own use. We have a housing crisis and we have big targets for how many homes we need to bring to market. Any increase in supply should first be consumed by us domestically, but there is absolutely no reason why we could not create a product that is good enough and of high enough quality that it could travel to other places.

Jennie Daly: At this point we are using a supply chain, so that there will be a manufacturing, outward looking—

Q74 Mr Prisk: Maybe for them that is where the benefit comes from.

Jennie Daly: Yes, absolutely. BIM is probably more achievable with MMC and much more standardised component elements. Generally, the feeling for housebuilding in the use of BIM is that our supply chain does not tend to use it. The supply chain of contractors that are dealing with large-scale contracts has learned to utilise BIM, but a lot of the housebuilding supply chain does not utilise it at the moment.

James Thomson: Housing markets internationally are very varied, and that is a potential barrier to internationalisation. There are a lot of very different regulations in different markets and different construction methodologies. I have to say, there is potentially an opportunity longer term, but there is an awful lot to go for in the UK market that will keep the industry busy for a long time.

Steven Boyes: I agree with James. From a BIM perspective, all our design teams are now using BIM, so all our product is designed on BIM.



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In terms of the overseas market, we have spent a fair bit of time in the last few years visiting Europe and those sorts of markets. We have been to the Netherlands and Germany. It is a different type of product to what we are using in the UK, so if you were to start exporting into Europe it would have a different quality, different finish and different design and style. That would be my concern.

Q75 Teresa Pearce: It has just been touched on a moment ago, about finance. I represent Thamesmead estate, which was built 50 years ago with a very modern method of construction, which is concrete prefab basically, and the properties are all unmortgageable now. That was then, and modern methods of construction are now very different, but mortgage lenders are still very cautious. They like standard build. How do you get mortgage lenders, as well as investors and insurance companies, to engage with this, and have you had any difficulty in that?

Steven Boyes: I agree with you. Lenders are very nervous, particularly with regard to new technologies. We have a very sophisticated introduction approval scheme, for which we get third-party approvals and we involve engineers. We then pilot those units on-site. We invite the lenders and their surveyors to view those properties and generally, if they have the NHBC or other approved type warranties, and are certified, we have found them to give approval.

Q76 Teresa Pearce: Is that with mortgage lenders?

Steven Boyes: That is with mortgage lenders, yes.

Q77 Teresa Pearce: Are all mortgage lenders the same?

Steven Boyes: No, some are more conservative perhaps than others and reluctant to lend on MMC, but it is a matter of engaging with the lenders and showing them the benefits.

Q78 Teresa Pearce: They want tried and tested products, do they not, so it is very difficult when you are new?

Steven Boyes: From my own personal perspective, sometimes, if you are showing the lenders a product that looks conventional, that ticks a big box.

Q79 Teresa Pearce: Mr Thomson, have you had a similar experience?

James Thomson: We have invested a lot of time in ensuring that the product we use, which is the Ilke Homes product, is mortgageable. The first stage of that was getting the appropriate accreditations, so BOPAS accreditations in terms of offsite construction, but probably most important for us was obtaining NHBC accreditation for the homes, because that is the most familiar accreditation among homebuyers.

That took a long time to achieve and, again, bringing a different method of construction to the industry meant that NHBC had to look at it in a different way. Rather than providing certifications on individual homes at



different stages of construction, it was looking at effectively signing off the ground works and the completed home, but then at the other stages effectively they were required to sign off a factory process. That is a very different way of NHBC having to look at the product. That required a very significant investment in time, but it was important.

Having achieved that, we have now quite a wide range of lenders that are prepared to lend on Ilke Homes. Five of the major mortgage providers will do. Again, there was an education process involved in that. As a broader sector, as we see more volume and a greater range of modern methods getting acceptance in the sector, it will become less of an issue, but it certainly is an issue for the sector at the moment.

Jennie Daly: Perhaps I should declare that I am a non-executive director of Peabody and I stood on the Thamesmead committee. I would agree with Steven, and Taylor Wimpey goes through a similar process of engagement with lenders. The BOPAS approval is an assertion of fit for purpose, but for us the NHBC engagement and accreditation through that process is very important.

As a customer-facing business with customers at the heart of all our decision-making, it is very important to us that we ensure that any methodology that we are either trialling or bringing into scalable build is fundable, mortgageable, has longevity and endurance, and will provide our customers with a safe home economically. At the moment, that overall warranty process, engagement with lenders, engagement in the factory process with the supply chain or the manufacturer, and engagement with the NHBC, is how we go through it, but it could be more joined up.

Alun Macey: I would agree that modular providers and MMC providers can normally demonstrate mortgageability by getting BOPAS accreditation in place, and getting building warranty providers engaged in the process and validating the good work that they are doing. It is good to see that, if you compare it to last year, the number of MMC providers taking on and participating in the accreditation process with BOPAS and Lloyd's Register has gone up an awesome amount.

Therefore, our approach to getting mortgages on our properties when they are modular is not a big problem. The thing we encounter, which is slightly trickier, is comfort among insurers and valuers, especially in light of the new regulations that have come out against combustibility. There is some nervousness about cladding systems, but you can have cladding systems that are not brick that are still perfectly compliant. At the moment, there is a lot of nervousness around that and people understanding the leeway associated with what is and what is not combustible. Over time, with education and people becoming more aware, they will become more comfortable and that will become less of an issue, but right now it is a bit tricky.



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Farmer, who explained that the MHCLG MMC working group—too many initials there—is working on an MMC scheme that will establish a common set of minimum standards that all warranty businesses would sign up to. Do you each of you support that proposal and do you think it will work? Will that scheme achieve what it is meant to?

Alun Macey: It is a very positive thing and it needs to happen. A lot of good work is going into it. Any standardisation associated with design is good for MMC. With all the momentum that there is behind that at the moment, insurers and mortgage providers will get on board with it. There will be more resistance from the supply chain. It will give those who are emerging confidence to carry on, but those who are already operating will see it as a threat to their competitive edge. They will have invested a lot of pain and time in R&D and their own intellectual property in getting to the position they are in as one of few providers. That might be where there is most resistance.

Steven Boyes: I absolutely agree. My view is that we have a number of external accreditors—BBA, BRE, TRADA and BOPAS—and they all sometimes look at slightly different things. They are not fully aligned, so if we could have a singular set of standards it would make the process much better.

James Thomson: I absolutely support a single set of standards. A lot of work has already been done in the sector around that and it is really bringing together what has been done, but perhaps in a single way.

Jennie Daly: I can wholeheartedly agree with the rest.

Q81 **Liz Twist:** We talked about acceptability from mortgage lenders and others. What about customer acceptance of the modern methods of construction? Is that an issue at all?

James Thomson: We have sold relatively limited numbers of homes so far in the open market, but for those numbers that we have sold it has not been a barrier at all.

Jennie Daly: Thus far, we have not had any sort of customer acceptance issues. They are rightly inquisitive as to the nature of accreditation and certification, as we were discussing, so an MMC scheme that will give some sort of robustness across a range of bodies will only help.

Steven Boyes: From my perspective, we have about 80 sites where we are building with MMC. We have focus groups on the completion of those sites with our purchasers, to get feedback and get them in to show them the houses. Generally, the feedback is positive. The big things they note are the thermal efficiency and particularly the acoustic performance. With so much insulation, they are very quiet.

Q82 **Liz Twist:** We had the discussion earlier about whether timber frame counts as a modern method of construction.



Steven Boyes: That is timber frame and steel frame.

Liz Twist: That includes timber frame.

Steven Boyes: Yes.

Q83 **Chair:** Briefly, because I am conscious of the time now, you are all saying, "It is all good. It will be all right. You can trust us". I have heard words today like "steel frame". We had those in the past and they corroded. Timber frame we had in the past and the damp-proof membrane got pierced. We had concrete panels. They either leaked or they had spalling concrete as a result. A whole estate in my constituency has been demolished; it was only built 40 years ago. You say, "It is all going to be all right now. We have learned all the lessons from the past. Trust us". Can we?

Alun Macey: The proof is in the pudding. We have just completed the tallest modular residential tower in Europe. It went absolutely fine and it is doing just fine. We used the same materials as traditional construction. We just put them together in an offsite location. They are still building-regs compliant. They still go through the necessary accreditations, tests and validation. There should be comfort there around the product.

Jennie Daly: That is a reasonable challenge, Chairman. Looking at the history of delivery of MMC, particularly where there has been a great effort to increase its adoption over a very short period of time, mistakes have been made. I said earlier that we put our customer at the heart of all our decision-making, and we want to be absolutely sure and able to assure our customer that the method of build we are utilising is going to deliver them with a long-term quality home.

With timber frame, we have seen improvements and learned some of those lessons. Light-gauge steel frame is probably more adaptable to apartments than to individual dwellings, but that long-term robustness and the level of information and academic information on MMC is lacking for some of the methods. It does make us cautious in the adoption of some methods.

James Thomson: All I will say is that, in the Ilke Homes products that we use, many of the components are also used by traditional methods. It just happens that they are assembled in a factory environment. Secondly, one of the reasons why it has taken so long for Ilke Homes to get through NHBC approval is ultimately that it is an insurer of products and, with certain things that have happened in the building industry over the last couple of years, the thoroughness of certification has been very high. It gives us a high degree of comfort. Can it give a 100% guarantee? Time will tell.

Chair: Yes, for 10 years, but they are supposed to last for 100.



James Thomson: That is a fair point. The steel frame, which is the main component that is most difficult to replace, has a 150-year lifetime. Doors and windows will have a similar lifetime to traditional construction.

Steven Boyes: On the panel certification, they are looking at lessons learned from these schemes that have failed in the past, particularly NHBC approval or the warranty provider. The thing I would emphasise is that the product and the schemes we are using essentially use a lot of the same materials we are using today for traditional masonry. For example, the large-format concrete panel I mentioned is the same material as we use for the small building blocks. It just comes in very large sections.

Q84 **Andrew Lewer:** Building on the Chairman's previous question, you talked about building regulations. One of the responses has been to say, "Our MMC is just doing what we do on a building site in a factory", but there are other forms of MMC that we have talked about that are not just that. I am interested in how they work, in terms of current building regulations, how compatible they are with them, how safe they are and particularly your response to the Association of British Insurers, which has said that some forms of MMC construction incorporate combustible materials like wood and polystyrene, and the Government are suggesting that those products should be banned on tall buildings, but building regulations at the moment for non-tall buildings do not prescribe. Do building regulations need to change to adapt to these alternative methods? How can we have comfort that those MMC methods are able to withstand fire and other safety concerns?

Steven Boyes: From my perspective, I agree. Building regulations need overhauling and need a specific section on MMC. Currently, you need to go through all the various parts of building regulations to get to those elements relative to MMC. If MMC is going to be a big driver of volumes, it needs to have its own section. I also feel that there needs to be more clarity with regard to fire safety in building regulations.

James Thomson: The product we are building is principally two or three-bedroom low-rise homes. They are built in accordance with current building regulations. The focus, quite rightly, has been on higher-rise buildings for very obvious reasons, which is where the regulation probably needs the most scrutiny. Fire in low-rise homes has not been an industry issue, so arguably regulation is more appropriate there.

Jennie Daly: The current building regulations do not tend to focus on MMC. Approved Documents A and B focus on traditional and timber frame construction, and MMC is then left to interpretation to a degree, which is not particularly helpful with compliance. There are five elements of the construction that we would focus on when looking at any type of construction: the structure itself; very importantly, the behaviour in event of fire; thermal performance; noise performance; and resistance to moisture. Any of our teams within Taylor Wimpey that are considering any form of MMC must look at those five things. We would be supportive



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of updating the building regulations to reflect the needs and different requirements of MMC.

Alun Macey: We are not using those other forms of MMC, so I am not best placed to comment.

Q85 **Andrew Lewer:** Jennie just touched on other elements of building regulations for MMC and energy efficiency. I wondered if all of you could expand a little more on that. Would MMC be used more if building regulations required much higher levels of energy efficiency than they currently do? Allied to that, would a standardised design code help you deliver more MMC homes than are currently being delivered?

Q86 **Alun Macey:** I believe that modular construction would be in higher demand if that was the case, simply because living areas are more compartmentalised, just by the sheer nature of how they are put together. You have your own structural floor, which is separate to the structural soffit of the person beneath you, so naturally, in terms of thermal performance and acoustic performance, it is going to be more energy efficient.

Jennie Daly: Built-in energy efficiency is the most economic and the most likely to succeed. In that respect, the likes of timber frame and closed-panel timber frame perform very highly. Where we have undertaken trials on closed-panel timber frame, it has been to meet the gold standard in Scotland, for example. It is possible to achieve high levels of thermal efficiency and energy efficiency within traditional build, but it would require a much more systematic and quality assurance approach than we would often see.

James Thomson: One of the selling points to our customers for the homes built in Ilke Homes' factory is the fact that they are thermally and acoustically more efficient. They are built to sustainable homes level 3, which is basically 20% better than current building regulations. They take about 20% to 30% less to heat than a traditionally built new home. As you say, if we tightened up regulation on sustainability, that would have a push towards modular construction. For PRS, the registered providers and the housing associations, that is also a positive in terms of lifetime costs for homes.

Steven Boyes: Inherently, MMC tends to have better airtightness because panels are bigger. Therefore, it makes it easier to achieve energy performance standards. Having said that, I believe masonry construction could be upgraded in terms of wider cavity walls and more insulation to meet the same standards. It is something that is not necessarily available in masonry. It can be achieved. My only word of caution, though, is that sometimes lightweight structures that are using MMC can have a tendency to overheat. That can be a concern.

Q87 **Mary Robinson:** Not only do we need to build the right homes in the right places, but we ought to build homes that people want to live in. I



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would imagine, particularly given the concerns around climate change and so on, that if people were presented with the opportunity to be in a home that was thermally efficient, good for the environment and saved on bills it would be a really great selling point. Are you taking the opportunities that you could to really sell this to the customer?

James Thomson: Again, it is early stages, but with the homes that we have sold for open market many of the customers have seen those benefits. Importantly, they see the benefits of that in a home that, in every other way, looks like it has been built using traditional methods, but they are thermally more efficient and they are built in a more sustainable way. The homes themselves are probably slightly bigger than we might build through traditional methods because the platforms that we build to have slightly higher ceiling heights and slightly larger windows, so it feels like a more contemporary and modern product as well, which has customer appeal.

Steven Boyes: Bearing in mind that nearly 80% of what we build is masonry, we are achieving the same standard of thermal efficiency as we would in timber frame, steel or concrete.

Q88 **Mary Robinson:** It is exactly the same.

Steven Boyes: Round about the same, yes, there or thereabouts. There are advantages in terms of how easily it can be upgraded to higher thermal standards, but our purchasers are not currently disadvantaged buying a timber frame or a masonry home from a thermal efficiency point of view.

Q89 **Liz Twist:** Quickly, can I ask about the methods of heating that you are putting in these MMC properties, the impact on ventilation and so forth?

James Thomson: Our Ilke homes at the moment have traditional mechanical systems, but because of the greater thermal efficiency, they can be heated electrically or could even become zero carbon with solar panels at a relatively modest additional cost.

Jennie Daly: I would concur. Our MMC timber frame homes have traditional heating systems.

Q90 **Liz Twist:** We are talking gas.

Steven Boyes: Gas, yes.

Q91 **Liz Twist:** With the increased efficiency, is account being taken of the need to ventilate?

Jennie Daly: Yes, very careful calculations are undertaken by the technical teams regarding ventilation. Steven mentioned airtightness, which is one of the final tests by the NHBC. There can be issues of overheating, and that is something that the architectural journals and our technical teams are engaged in at the moment. As thermal efficiency



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increases and the airtightness of properties increases, the need to heat reduces or they can become overly warm.

- Q92 **Liz Twist:** Account is going to be taken of the need to ensure there is proper ventilation, if there is gas heating or other kinds of heating, although they are more tightly sealed.

Jennie Daly: Yes.

Steven Boyes: It is gas heating with airtightness that meets or exceeds building regulations.

- Q93 **Mr Dhesi:** Let us delve into workforce and training. Evidence to our Select Committee suggests that a shift towards modern methods of construction would require different skills, namely high-skilled technical jobs, project management, semi-skilled work, assembling structures and the like, working alongside automation in a factory setting. Mr Boyes, from your own experience, what sort of skills do you see as particularly necessary to develop within the UK workforce?

Steven Boyes: Yes, I agree that we need some different skillsets and different sets of apprenticeships. The conventional bricklaying and joinery apprenticeships will continue, but we need a multi-skilled type of apprenticeship suitable for MMC. For example, we have introduced erection crews. It is a different type of skill to what has been used in the past. A number of those crews have now been approved by the Structural Timber Association, and certified as competent. We need design skills in terms of BIM, which is appealing to a lot of the young generation. It is a new skillset that we need to develop. We need new apprenticeships for MMC, whether it be in the factory or on the site.

- Q94 **Mr Dhesi:** Mr Thomson, what do you think?

James Thomson: One of the reasons we went into MMC or volumetric solutions was the skills shortage. One of the advantages of offsite construction is that it can involve a greater degree of semi-skilled labour. I mentioned earlier that over two thirds of the employees in Ilke Homes come from outside the sector and work in a factory environment. A lot of those skills can then be taught in the environment. A lot of those skills are potentially repetitive in nature. One of the important things that Mr Boyes touched on was ensuring that that labour force was multi-skilled rather than single-skilled, but I do not see any major barriers to that.

- Q95 **Mr Dhesi:** Having worked in the construction industry for well over a decade, I would suggest that training needs to be aligned with industry needs. Ms Daly, if we are indeed to move towards MMC, as a developer have you designed or delivered any training? If so, can you elaborate with some examples?

Jennie Daly: Yes. We have, over a number of years, been increasing our direct-trade recruitment. We have also materially stepped up our apprenticeship programme, specifically to key trades. Our hybrid model,



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if you will, is to directly employ apprentices in Taylor Wimpey and then to pair them with skilled direct-trade gangs or groups within our sites. We have also trained some of our own erection crews on timber frame. We are seeking to address the skills shortage traditionally through increasing our own training and a direct focus on trades right across our business. Every one of our businesses has a five-year plan to increase the level of direct trades. Some of those direct trades in carpentry and joinery tend to be the most in demand for MMC skills. They have the most transferable skills into those that are MMC facing.

I said earlier that there was quite a spectrum of MMC methodologies and quite a broad spectrum, then, of erection methodologies. There should be some alignment in the training. Steven talked about a multi-skill apprenticeship. That certainly has currency. There are a number of different proprietary erection approaches that we would have to seek to address, or to see some alignment in those erection approaches.

Q96 Mr Dhesi: Mr Macey, what do you think?

Alun Macey: We do not, but only because we do not self-build. Modern methods of construction enable you to draw on a different sector's resource. You can draw on manufacturing resource rather than just on the diminishing construction resource. It depends on your approach to manufacture as well. Different providers will look at high automation; others will look at pure assembly. Therefore, you can take out fabrication and the real tradesman's work, bring in a labour base and upskill from there. You can enable those workers to work on different workstations through a production line.

Q97 Mr Dhesi: The Government have made various bold statements. In its strategic plan for 2018 to 2023, Homes England asked for industry bodies to act as partners and contribute to increasing capacity by offering apprenticeships and delivering skills training. Is that approach working, Mr Thomson?

James Thomson: It is beginning to have some effect. As Keepmoat Homes, we invest very heavily in trainees, apprenticeships and graduates. Approximately 8% of our workforce falls into that category. As has been mentioned here earlier, modern methods help bring additional skills into the sector, but the current sector also needs to encourage many others to enter the sector and to be trained. We absolutely support anything that brings a co-ordinated approach to that. In short, yes.

Q98 Mr Dhesi: Mr Macey, what do you think?

Alun Macey: Yes, it is going to benefit the sector. How they structure the apprenticeship scheme is going to take some thought, in terms of who holds the budget and how they roll that out. For young people to be incentivised to come into the sector, they need to feel assured that there is going to be work for them at the end of it and the working conditions need to be suitable. Certainly, I would say that manufacture aligns with



that, because working in factory conditions is far more attractive than working in construction.

Q99 **Mr Dhesi:** Lastly, the Farmer review recommended that the Government should consider introducing a charge on business clients with a clear implementation timetable in order to ensure that there is significant training within the industry. Would such a charge be a good idea, Ms Daly?

Jennie Daly: We already pay and have historically paid a levy to the Construction Industry Training Board. At times, housebuilders have felt that the CITB has not been particularly focused on the specific skills that housebuilding, as opposed to general construction, requires.

As I said, as Taylor Wimpey, we have taken significant steps in our own apprenticeship scheme. We also have management training and management apprenticeships, not just those that are site-based. We use alternative channels to the traditional channels of recruitment. We need to take control of our recruitment and our training ourselves, but Government and other training bodies can assist. The HBF has a homes-skills training body, which has helped in raising the profile of the rich career that housebuilding can offer. We really ought to focus more on helping those who do not have, or have not had, family involved in the housebuilding industry to understand the wide range of opportunities and careers that start on site and can lead to managing large businesses.

Q100 **Mr Dhesi:** Mr Boyes, would a 0.5% charge on construction value for business clients be a good idea?

Steven Boyes: Similar to Jennie, we already pay a levy to the CITB. It is something like 1.25%, based on construction turnover. In addition, though, we take on average 200 apprentices per year in terms of trades. We also take on ex-Armed Forces personnel. This year we are taking something like 60 ex-Armed Forces personnel into the business and retraining them. We have worked with the colleges and have developed our own bricklaying apprenticeship with Stephenson College in Leicester, where we have reduced the bricklaying apprenticeship from two and three years by six months each. It is an 18-month and a two and half-year apprenticeship. The two and three-year apprenticeship term is too long for what is required.

Q101 **Mr Dhesi:** In short, Mr Boyes, is the 0.5% levy a good idea or not?

Steven Boyes: Bearing in mind that we are already paying a CITB levy for training, it would be a duplicate charge. We need to make sure the charge we are paying is properly used for MMC-type apprenticeships.

Chair: I am cautious about time now. We have two more sets of questions to follow up on.

Q102 **Helen Hayes:** Can I ask about your experience of local planning and



working with local planning authorities in the context of MMC? Particularly, have you encountered any challenges in planning that are unique to MMC?

Alun Macey: There are no significant barriers in planning to MMC. Naturally, it would be helpful if planning authorities were educated in the benefits of MMC so that they could see how attractive it is. If there was a planning incentive to use MMC by the process being quicker, naturally that would be beneficial as well. The biggest challenge we have is probably the section 106 condition about using local labour. If you take a 50% portion of the construction and you put it in a location that is far away from the build location, it is obviously going to be a challenge. That is hard to overcome.

Jennie Daly: There is little resistance to MMC in and of itself. We talked about the up-front costs; Alun has talked about the benefits of repeatability. That can meet with some resistance. It is also fair to say that there have been some issues, not least those the Chair pointed out, with historical failures in MMC. The likes of timber frame and light-gauge steel perform best and are at best quality with relatively simple construction styles, with uncomplicated junctions. They tend not to perform well in steps and staggers. Where there is a high requirement for design differences, variation or vernacularisation, some forms of MMC can struggle to meet those requirements. Generally, we have not met with any specific resistance.

James Thomson: Yes, likewise. As well as ensuring that planners are educated around the benefits, it is also about being educated around the constraints, which have just been articulated. There are certain limitations. So long as planners understand those and can work within those constraints, it will just make the process easier.

Steven Boyes: We have no real issues from the planning perspective. Where we tend to see problems is where certain planning authorities want to tweak and change elevations, move windows, make bigger windows and increase floor-to-ceiling heights, which impacts MMC.

Q103 **Helen Hayes:** Mr Macy, you mentioned the potential need for the planning process to incentivise the use of MMC. Some of you commented that there can be resistance from communities, sometimes because of a lack of understanding and sometimes because of what MMC can actually deliver and its limitations. Is there a need for better, perhaps bespoke and specific, processes for community consultation and engagement at the pre-planning stage, as the LGA has recommended, in cases where MMC is being used?

Jennie Daly: It is not an issue that I have any experience of or that has been reported to me. I see no reason why, in our consultations, if a modern method of construction is being used, we would not communicate that. Unfortunately, as the planning process tends to take some time, we could be introducing an MMC method of construction quite some time



after the initial consultations have been undertaken, but it is something we would be very open to.

James Thomson: We tend not to have too many challenges in terms of the areas that we are developing. Generally speaking, they are brownfield areas where people wish to see development. We have not seen resistance to MMC. We see consultations being an important part of our process anyway.

Steven Boyes: Barratt does not tend to use volumetric. If you are using volumetric, that is where the issues come because you have only seven or eight designs to choose from. We have the same range in masonry as we have in MMC, so we are able to produce the same schemes and quality as we are normally able to.

Alun Macey: When you get a 30% betterment in the build duration using volumetric, it is a shame that there is no incentive earlier in the process. The construction sector deal is looking for a 50% improvement on time from inception to end of build. If you could maximise the opportunity in the whole process, that would be of benefit.

Q104 **Liz Twist:** I wanted to ask about small and medium-sized housebuilders. We have heard that they face unique barriers in using modern methods of construction not experienced by larger developers, such as access to finance and land. Is that something you agree with? If so, how could the Government and local authorities help SMEs overcome those barriers?

Alun Macey: We would agree. If you could increase the provision of land available to SMEs to develop, that would be of huge benefit. Homes England is making land available. I read last week that there was 2,500 acres coming. If that could be segmented so it is accessible for SMEs to develop, that would help us. If there was greater incentive to use modern methods of construction, it would also help us. Perhaps Homes England can put stipulations on the land saying that a certain percentage of it needs to be developed in a certain way. In terms of finance, if there could be greater educational comfort generated among lenders such that the payment terms can be more flexible, again that would be a big barrier overcome.

Liz Twist: That is lenders to the developers.

Alun Macey: Yes.

Steven Boyes: I have no knowledge of the individual financial issues or constraints on SMEs, but the work the industry has done on MMC over the last four or five years will help SMEs. We have solved a lot of the issues. We have done that with our supply chain. Our supply chain is also supplying those same SMEs, so they are going to benefit from that work. There should perhaps be a standard book of off-the-shelf designs that SMEs could use to save the expensive design charges and costs associated, so there are certain things. Homes England is trying to help SMEs, but it could be made easier for SMEs.



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James Thomson: MMC may well help SMEs, in particular on smaller schemes. Again, that is picking up on comments that have been made. If some smaller schemes could be brought to the market that are suitable for SMEs, by using MMC they might be able to build those smaller sites entirely with modern methods. That might simplify many of the processes and skills that they need, but it probably would require some access to finance for them to deliver on those types of schemes.

Jennie Daly: First of all, around access to finance, that is something I would look to our smaller builders to comment on. As with everything, a balance is required. We have talked about the additional cost and the up-front loading of cost. Some small builders will actually be penalised by using MMC in terms of growth and accessing land. Homes England is looking at introducing a proportion of MMC use as a sort of entry gateway to accessing its land. That may cause more constraint for a small builder that needs access to land in order to grow and expand, by introducing an additional burden rather than a boon. It is a balance as to how that incentive is used. It needs to be an incentive, rather than potentially yet another burden or an impact on their viability.

Q105 **Liz Twist:** One of the things we talked about was the higher costs because you are buying a finished product. The other thing that strikes me, which we have talked about, is the actual construction companies themselves that are creating the units. Are there issues that feed back that way and put limits on modern methods of construction and new house types?

Alun Macey: It is about cash flow. For a developer, first and foremost, the two different periods of construction are happening in tandem. You have your foundation works and everything on site, and, at the same time, your fit-out is being progressed somewhere else. That up-front cost is expensive. That cash-flow profile is a problem. Lender comfort around that would help. Equally, on the flipside of that, the manufacturer needs that monthly cash injection in order to keep manufacture going.

Q106 **Liz Twist:** Is finance a barrier to increasing the volumes coming through from the manufacturers?

Alun Macey: Yes, I would say so. If there were greater provision or flexibility on lending, there would be greater comfort and confidence in coming to the residential sector and using it.

Q107 **Liz Twist:** Mr Thomson, did you want to say anything on that?

James Thomson: No, it was really just agreement. MMC brings some benefits, but ultimately for an SME builder it is about cash flow. Therefore, they will need access to finance to be able to access the benefits of MMC.

Q108 **Liz Twist:** Lastly, in his oral evidence to the Committee Ben Derbyshire reiterated the recommendation in the Letwin review that larger sites should be subdivided among developers, including smaller builders, to



increase diversification. You have touched upon that; certainly Mr Macey touched upon that. Would you agree with greater subdivision of larger plots?

James Thomson: Yes. Where we have larger schemes, we certainly look to diversify them in terms of tenure. There are some larger schemes where we will co-develop with one or maybe two other developers. That provides a greater variety of product and high absorption rates, so yes.

Jennie Daly: Planning already allows, and some planning authorities would require, sub-sales for either customised or self-build homes. Some of our models include selling parcels or elements of sites. Access for SMEs is most likely to be promoted through local authorities allocating a broad range of smaller sites. The Letwin review talked about segmentation and increased diversity, and tenure is certainly part of that, albeit there are limitations to the viability of sites with greater proportions of affordable housing or, for example, build-to-rent, which tends to be incapable of meeting the open-market costs.

The danger in an overly segmentised approach, either in the type of house—whether it is a one-bed or a five-bed home—or in the type of builder, is that it can reduce the level of agility that a housebuilder has. Particularly as the market changes, the more flexibility you have to move and change what is on offer depending on how the market moves, the more robust you are and the more likely it is you can continue to build at pace. If there is a very rigid approach to segmentisation and the site is split down in an overly rigid way, it could lead to the counter happening, which is that the housebuilder has to slow down while it seeks changes to its planning permission or other approvals.

Q109 **Liz Twist:** In the context of this inquiry, would it help increase the rate of modern methods of construction?

Jennie Daly: I am not convinced that it would.

Chair: Thank you very much for coming to give evidence to the Committee this afternoon. It is appreciated.

Examination of Witnesses

Witnesses: Lord Porter of Spalding, Wayne Hill and Trina Chakravarti.

Q110 **Chair:** Thank you for coming to give evidence to the Committee this afternoon as our second panel. Can I ask you to go down the table and say who you are and the organisation you represent, please?

Lord Porter of Spalding: I am Gary Porter. I am the chairman of the Local Government Association.

Wayne Hill: My name is Wayne Hill. I am the director of construction services for London and Quadrant.



Trina Chakravarti: Good afternoon, everyone. I am here from the National Housing Federation, but I am also here in my capacity as project director for Building Better. That is a new project being supported by the National Housing Federation looking specifically at MMC.

Chair: Thank you very much for coming to the Committee this afternoon.

Q111 **Helen Hayes:** I would like to start with the role of local plans in the planning process and delivering MMC. As a Committee, we have received contradictory evidence on the role of local plans in creating MMC housing. Some submissions have recommended that local plans need to be more explicitly positive about MMC, but others say they should not specify the use of MMC. In your view, what role should local plans play in promoting and setting the policy framework within which MMC is used?

Lord Porter of Spalding: First of all, you should clear up what MMC is. Based on the session I have just listened to, it is about as modern as—I do not know. We have been building timber-frame houses since Elizabethan times, so it is not really that modern. I do not think MMC is applicable. That shows you why you could not stipulate it in a planning process. If I stipulate that a certain quantity of properties have to be MMC, every man's brother and his dog will come up with a different definition of what that is to meet that criterion, which means you will end up with absolutely no planning control. Planning should be blind to the type of construction method here. It should be a product suitable to meet the need of the location where it is going. How it is built should be a contract between the person purchasing it and the person building it.

Wayne Hill: Slightly expanding on that, and in agreement with some parts, one of the challenges of MMC is that you cannot put a broad brush on it. Depending on the typology of the home you are building, the site and the location, one MMC that is perfect and optimum in one area will not be suitable for another. In some respects, where we have seen it defined by prescribing percentages et cetera, that is the same thing. A very intricate site might be optimised at only 50% of items being built offsite. An average site might optimise at 70%. By "optimise" I mean that, with any more, it becomes cost inefficient versus traditional. A really efficient site might be as much as 90% or 95%. If we start to stipulate percentages or values, we could make it prohibitive.

We have already had one incident involving an early prototype with Homes England, where, more dangerously, a particular methodology was prescribed rather than a "use of". Mark referred to the seven types. One was prescribed, and it made the site unfeasible for us. It would be really good and encouraging, but how it is approached and how it is targeted will be as important. I do not what your thoughts are on that, Trina.

Trina Chakravarti: To add to that, I do not have a view specifically on what local plans could do so much as on where the barriers are and, more generally, what we could do. Perhaps that would be helpful to talk about.



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First, because traditional construction is so much more flexible, often you will not tender for a contract until after planning has been gained. Because, as Wayne just said, the type of technology you use constrains the design and the building material you use, you have to apply for planning permission working very closely with the offsite manufacturer. That calls for a completely different kind of legal contract and for a different way of managing the development process. That is one really big challenge that some of our members have told us about. Some training on that for planners and planning committees could be helpful.

The second thing is particularly relevant to small and medium-sized housing associations. They end up having to buy land that often already has planning on it. Even though they want to build using MMC, the process of rolling planning permission back in order to do that has proved impossible. Shepherds Bush Housing Association is a good example of that. The only other quick thing to mention is that we have had some feedback from members that local planners sometimes equate MMC with poor design. Building a robust evidence base for what MMC can do would be really helpful there.

Q112 Helen Hayes: We have received some evidence suggesting that design standards that have received planning approval in one area should be fast-tracked through planning processes in other areas. I am looking at Lord Porter, because I think I know what you are going to say about that, and I might be inclined to agree with you. What are your thoughts on that?

Lord Porter of Spalding: Let me build everywhere. Give me planning permission for every single piece of land in the country. That would be great.

Q113 Helen Hayes: Is it realistic? Is it in any way beneficial? In asking the question, this is the issue that underpins it. There is new technology that has the potential to deliver much needed homes much more quickly, but there is a degree of healthy scepticism and questioning as to what it can really deliver on the ground. The planning process is the crunch where those issues get debated. What role does the planning system have in that generally?

Lord Porter of Spalding: Focusing on the planning system is the wrong place to be in this whole conversation. I honestly cannot see how you can have a barrier against one type of built house. I should declare an interest: I am a bricklayer by trade, so I have a pretty jaundiced view about anything that is not traditional, but I was brought up with "Three Little Pigs" as the nursery rhyme I was told. Everybody knows that the only one that kept the wolf away was the one that did not blow over, the one that was built out of masonry. That should not be a planning matter. We should not get planning caught up into this space. If the principle is that the site is suitable for residential accommodation, it is suitable for it. How you build it should be a contract between you and the client. If that



is a social house, it will be between you and the council. If it is between a private buyer and the constructor, that is where the contract is.

The problem with non-standard construction—I refuse to call it “modern methods”—is that, as you touched on in your previous session, it has suffered from a massively bad reputation, largely due to the cowboys who were in the industry historically. Over the last 30 years, offsite construction has got a bad name. It has to get over its bad name before people are prepared to buy it again. It has to become an aspirational product before you can get it out at any sort of scale. The only way you are going to get it at scale is if the state steps in and purchases quite a lot in quite a short period of time.

One of the good things about lifting the housing borrowing cap is that councils will probably be the single biggest customer base for offsite construction, once we get the production capacity in the country. We do not have it at the moment. There are not enough factories to build anywhere near the scale we need, but we could be looking at probably 70,000 or 80,000 units a year. When you have that volume out in the country and people can see it, touch it, prod it and poke it, people will start to use their own money to buy it privately. Until that happens, the private sector purchasers will never come forward at scale. If you are given a choice between two types of property, you will always plump for the one you know best, which is the one that they were building 150 or 200 years ago, because you can see that they are still up now.

Wayne Hill: Going back to the original question, we do this in many other areas. There is actually nothing wrong with it. We do it with building regulations. There are the same building regulations in every area. We have done it with the nationally described space standard and codes historically. In principle, it is not a particularly obstructive idea. Again, it is the approach. What are we talking about with MMC? If we are talking about the classic cookie-cutter house, it is an issue. Just because it works somewhere, that does not mean it will work somewhere else.

As a business, the approach we are taking is to develop a level of MMC within our build that allows us to respond to the vernacular of any area. In that regard, if we can get something signed off by NHBC, a local authority or otherwise, we can have it signed off centrally and then we can use it in multiple areas. That aligns with what you are trying to say. Can we make an efficiency by using multiple local authorities’ approval schemes so we do not have to approve over and over again? There are some efficiencies that could be made there. We would support that.

Q114 Helen Hayes: On that, planning permission is a fundamentally spatially rooted thing. That is very different to space standards and aspects of policy or building regulation. I suppose the question is this: is there ever any circumstance in which something that has been given planning permission for one site in one particular part of the country should be fast-tracked through the democratic process in another part of the



country?

Wayne Hill: At the macro, large-site level, I would probably argue that there is not. You need to respond to the site. You need a solution that allows you the flexibility to respond anywhere in a very fair way. I have never seen two sites that are identical, and there is probably a good reason for that, without going into the social science of it. That would be problematic. This is where we would return to what we had in the 1970s and 1980s with schools and hospitals. We know that has not weathered very well; the legacy is very negative. When we learn the lessons of the past, we should not replicate the blocks like we did in the 1960s. That is probably not where we want to go. We want MMC that supports the way we develop our environment at the moment.

Trina Chakravarti: The only thing I would add is that, in my understanding, the manufacturing process allows you to have lots of standardisation in the layout and basic room sizes, but you can quite easily change what the façade or the roof looks like. The manufacturing process should allow that to happen, and I can see a situation where standardisation both on the demand and on the supply side could be super helpful.

Q115 **Chair:** Going back to the points Gary Porter made, he was saying it is about getting the volume up so we have capacity in the industry, and that is going to be done in the social housing sector. The Government have promised 300,000 homes a year. Shelter has said that, if we are going to deliver that, half of them will have to be in the social housing sector, in councils and housing associations. Do you see that being delivered if we do not have MMC? Put the other way round, is MMC or whatever we call it—non-standard methods of construction—essential to get those sorts of numbers?

Lord Porter of Spalding: From my point of view, yes, even though I said earlier that I do not personally buy into that space. If we are going to get anywhere near 300,000 homes a year, we do not have the capacity in traditional skills; we do not have the capacity in traditional materials. If we are going to push above 230,000 units a year, you will have to start building with different things, built by different people.

Wayne Hill: We concur. When L&Q set out its number to achieve, we looked around and saw everyone trying to expand at the same rate. We have looked at the capacity of the industry and at skills across the whole range, and we cannot really see a feasible way to do it just using traditional, hence the prompt for us to go on this journey ourselves as well.

Trina Chakravarti: The target is massive. Housing associations built 45,000 homes in the year ending 2018, which was a 5% increase, but we can and should be building more. MMC has to be part of the answer to that. My personal view is that it will probably become more important in the medium to longer term, and it will take a year or two to get off the



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ground with the housing association sector and possibly with local authorities as well. It absolutely has to be part of the answer to achieving the target.

Q116 Chair: On the other hand, should we not have some concerns over this? We asked the developers about this before, and they expressed concerns over things that had gone wrong in the past with the way they built homes. Very often there was a dash for large numbers, often led by the social-housing sector, where things went badly wrong. How much should we be worried about that with the desire to get 300,000 homes a year built?

Trina Chakravarti: Quality is absolutely paramount and comes after only resident safety when it comes to housing associations. An important part of making sure we are buying the right products, if that is the route the housing association wants to go down, is doing our own research and development. A good example of this is Home Group, in the north. With the help of Homes England, it has created an innovation village, which compares 40 offsite manufacturing products with each other, so it can do its own testing to see what is working. In addition to R&D in the sector, as you rightly point out, there is something about having possibly modest targets in the shorter term, being able to feed back anything that comes out of those initial builds into the iterative design process, and then ramping up production only once we are confident of the thing we are building.

Wayne Hill: Mark alluded to this in the previous session, in that there should be a steady evolution. The mistake of the past—I heard someone articulate it very well recently—is that we were after quantity, not quality. That was the driver in the 1960s and post-war, and rightly so, but it cost us dearly. We have taken an approach, and we have seen many good business models around us that have gone through this journey and they have done exactly the same, of slow incremental baby steps. It is recycling your learning; it is having the time to do that.

We should not knee-jerk and do it all at once. We know the failure and attrition rate with offsite is quite high historically. It may seem overly cautious, but the last thing we need is another false start, as it were. We are taking a journey that will allow us to make sure we can capture and hold on to quality while we evolve the amount of MMC that we use.

Lord Porter of Spalding: It is always a risk when you are doing anything in large numbers, but traditional construction is the same. If you are a spec builder that builds one or two properties a year, you will probably spend a lot longer than you will do if you are a volume builder on a site. You will have a lot fewer problems; your reputation will be a lot stronger for customer aftercare and all of those things. It is the same whenever you do anything in volume, unless it is cars. We did have trouble with the car industry when they started building loads as well—funny, that. Whenever you lose that personal touch, you are bound to have some problems. As a state, we need to get in the space of making



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sure the regulations and the controls are as good as they can be, to minimise the cost in terms of people's quality of life in 20 years' time when things go wrong, as they did 40 years ago.

Q117 **Chair:** Is it a particular problem for councils? With one or two exceptions, most councils have not built any houses for a long time. Is there a complete lack of a skills base there to start the process off? Will they have to be very careful about how they do it?

Lord Porter of Spalding: Councils will not be building them, anyway, will they? The last thing we will get back to is a massive direct labour force that is employed directly by the state. We will still be using factories owned by private sector people, because somebody has to put the investment in and it will not be the state, by the looks of things, for the next 20 years. Our role will be managing quality, and we already know that we do not have the exclusive role in managing quality. Most of the high-rise buildings in this country have been inspected by the private sector, not by the state.

Q118 **Chair:** Yes, but you still have to have a client function, which does not exist at present.

Lord Porter of Spalding: Yes, but similarly, if we are going to start putting up loads of properties, we do not have the planners to be able to give planning permissions at a scale greater than what we have now. We do not have clerks of the works, like we used to years ago. The state has to get its head round it. If it wants to will 300,000 units a year, it has to put the investment in to get all of the people necessary to be able to do that.

Q119 **Teresa Pearce:** We have pretty much touched on the next bit, but I shall ask anyway. Lord Porter has sort of answered this already, but I will ask our other two witnesses about working collaboratively and aggregating demand. Lord Porter just said that local authorities and housing associations can provide certainty for demand in order to support developers that want to use these methods. Could Homes England help provide stability in that? Some London boroughs have used the place scheme to use modern methods of construction to house homeless people temporarily. Why is that only for homeless people? Could that be rolled out if boroughs worked together?

Trina Chakravarti: I can talk about the aggregating demand question first. If I had to pick the one biggest thing from the demand side, it is absolutely aggregating demand and combining pipelines. That is exactly what Building Better is doing. It is bringing housing associations together to do exactly that, but it is not the only example. There is Homes for the North; there is the south-west alliance. These are all groups of housing associations coming together because they can see that only by doing that can they get the cost point they need and provide that surety to the supply side of the market. Yes, I absolutely agree on that first point.

Q120 **Teresa Pearce:** That is for housing associations. Have boroughs and



councils come together as well?

Trina Chakravarti: That is a really good question. At the moment, no, but there is an appetite to do so. We have had conversations with the south-west alliance, which is a group of local authorities. Anecdotally, I had a conversation with Lewisham Council last week. Housing associations have the appetite to partner, but it is absolutely coming from the other direction as well.

On your question about Homes England, yes, it has a role to play in providing stability. We support the strategic partnerships that Homes England has started. Of the 23 partnerships, 28 housing associations are involved. They provide a huge degree of both stability and flexibility to housing associations to be able to develop more homes, so, yes, they absolutely have a role to play.

Wayne Hill: Similarly, we are aware of work streams for collaboration that are developing. We are involved in one on precision-manufactured homes, which you heard reference to in the previous session. That is the GLA. That is working with Cast in a similar way to try to find a methodology that helps smaller SMEs aggregate an interest, put that through the supply chain and get a product they can all use.

It certainly is not centralised, though. It seems to be localised initiatives in different areas and sectors. It could maybe do with a little steering to help bring together those work streams. In fact, we have seen some doubling-up already. We have set everyone off to solve the problem and they have done so, but visibility-wise and collaboration-wise we probably have not set them up in a way that means everyone is talking to one another. We think this is core. We have a social mission of our own, and it is to try to lift those around us as well. As part of that, we have been trying to work with, share knowledge with and sponsor people around us to try to do this, to the point that we have been saturated and could only cover so many of them.

So we really do believe in this and we think it is going to be the key, but, similar to my earlier point, it has to be done where it is appropriate. It is wrong to enforce or over-encourage it. The last panel alluded to this as well. MMC can be prohibitive cost-wise if it is not used correctly. We have to have that balance as well. We want to encourage it where it is appropriate and guide people around us where they want to use different methods that might help them work best.

Lord Porter of Spalding: I am not quite sure why you would go through the expense of putting something up, leaving it there for one or two years and then taking it down again. I do not see anybody thinking that the housing crisis is going to be solved in the next five, 10 or 15 years. You should be building things with the expectation that they are going to be up for a lot more than a few years. I really do not get it.



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I saw Y:Cube by the YMCA on one site about five years ago. It was absolutely brilliant. It was really quick to put up; it was really bright and attractive. On the estate where they were sited, the houses looked quite depressing and the Y:Cube estate looked really nice next door to it. They claimed that they could take it down and put it up again. I have tried doing that with wardrobes, and they never go back up again, no matter how hard you try to do it carefully. I am not sure about the cost effectiveness of putting up accommodation and then taking it down again within a few years. I cannot see that it makes financial sense.

Q121 Mr Dhesi: Let us look into quality assurance, insurance and access to finance. Mr Hill, housing associations have concerns about the quality assurance of MMC-built homes. In particular, is there any evidence that repairs and replacements are more costly than in traditional builds?

Wayne Hill: There are probably two parts to that. Where we are looking at emerging technologies, there are the unknown aspects. We talked about some of the more exciting things like 3D printing, but we are not really using those at the moment. As the former panel alluded to, there is not really a material within our spectrum at the moment that is not being used traditionally. How it is used might be different, et cetera, in terms of quality. We see the opposite in the long term, certainly.

One of the interesting things about MMC, and particularly what we call the DFMA aspect, design for manufacture and assembly, in terms of quality and quality assurance over traditional build, is that it can become standardised and it can become repetition, much like products such as cars and phones. The benefit of this is that, when we make a mistake once, we learn from it once and then, when we build again with the same item, we do not make that mistake again. It is not true of traditional construction. There is a great deal of benefits that are not just about the technology but about the approach. That is probably the greatest gain that can be made here.

In terms of the materials, we ourselves as a business have decided to take an approach of using companies with a bit of pedigree, to take a more risk-averse route. The reason is that we are aware with the newer companies that it is harder. They do not have the pedigree. Where are the underwriters, et cetera? It can be very difficult for them to give that sort of assurance on new items. We are mainly leaning at the moment on companies that have been around 10 or 20 years so we are taking less risk. That is maybe not the right answer, but for us right now we are new into the market; we need to lean on others; and we need help from others, so we are working with more experienced partners. I might not be best placed to talk about the newer products on the market, as it were.

Q122 Mr Dhesi: Ms Chakravarti, do housing associations have concerns about quality assurance?



Trina Chakravarti: Absolutely, yes. It is a really pertinent question. The simple fact we have found is that there is a lack of an evidence base. We looked really hard. We asked hotel chains that use modular; we went to Imperial student accommodation; we even asked firms in Sweden, where 80% of their housing is offsite manufactured. There is such little compelling and coherent data to make the case. From our perspective, this is one of the biggest barriers to housing associations taking up more MMC: not being able to see where those cost savings could be made down the line on asset management and repairs.

Q123 **Mr Dhesi:** Lord Porter, in terms of evidence, are developers, housing associations and customers facing difficulties in obtaining finance and insurance?

Lord Porter of Spalding: If you have a manufactured product, I am not aware that you will have difficulty getting finance for it. The problem is what you heard from the guy from Pocket Living. They are brilliant products, by the way; I have seen them being put up. That site in Wandsworth would never, ever have been built if it was not for the way they did it. It was absolutely fantastic. If you get a chance, you should go and have a look; it really is a cracking job.

They have to invest all their money in basically a finished product, just not put on the next one, whereas if I am building them out of bricks and mortar I can claim stage payments all the way through. You have to have access to a lot more cash, in terms of your cash flow, to build proper offsite modular construction, not the timber-frame stuff where you are going to build some shed panels and brick them up later. That is cheaper and should be a cheaper product. The trouble with the volumes we need for the social sector is that the prices are still too expensive. It will cost you more to buy an offsite-constructed unit now than it will do a traditionally built one. That is where they are missing a trick. They need to find a way, and the Government are probably going to have to step in at some point, through Homes England or somebody, to push enough cash in there to make the units come out at a cost-effective price.

Trina Chakravarti: We have had slightly different feedback compared to Lord Porter from the housing association sector. Although it does not seem to be as difficult to get warranty providers to get on board, which I am sure is in no small part due to the work Mark Farmer and others are doing with the MMC working group for assurance, insurance and finance, we have found difficulties with getting funding. One example is Plymouth Community Homes, which had a funder back out almost last minute. They thought they were going to lose millions of pounds before another one then stepped in. We are still finding that to be a challenge in terms of MMC.

Q124 **Mr Dhesi:** That is good. The reason I asked that is that various insurers, including Zurich Insurance, have expressed grave concerns about durability and other issues. That is why we wanted to see whether it is indeed difficult to obtain finance.



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Mr Hill, lastly, I want to go into Mr Farmer's remarks. Mark Farmer, in his oral evidence to the Committee earlier this month, explained that the MHCLG working group is working on an MMC scheme that will establish a common set of minimum standards that all warranty businesses agree to. First, do you support that proposal? As well as local authorities and housing associations, can such a scheme give investors, insurers and mortgage lenders the confidence to engage with MMC developments?

Wayne Hill: We certainly support it. The main challenge we have seen from various insurers, et cetera, is that they want the pedigree. We do not have that. We cannot offer that for 20 or 30 years. We do not have a crystal ball. Right now, the only alternative to waiting 20 or 30 years to get the assurance that, yes, what we knew was right, and what we were building was correct and of a high standard, is to put some standards in place that will give them more assurance and confidence in the build. It is a classic case where, until someone comes up with something better, this is probably the best proposal on the table right now.

Mr Dhesi: Ms Chakravarti, do you support that?

Trina Chakravarti: I do not have anything interesting to add to that. I completely agree with everything you said, yes.

Q125 **Mr Dhesi:** Lord Porter, in terms of local authorities and housing associations, can such a scheme give confidence to investors, insurers and others?

Lord Porter of Spalding: If a product complies with building regs, it should be safe anyway, should it not? It should meet the building regs that are there. They are already there. The regulations are already there. Just because you made it in a factory, it does not mean to say you can build it to a lower standard. Surely you must be able to build it to a higher standard, because you do not have all the vagaries of working on a freezing cold building site in the pouring rain.

Q126 **Mr Dhesi:** Okay, fair play, but do you support the scheme proposed by Mark Farmer?

Lord Porter of Spalding: I have not seen what he has proposed. I certainly have not had any briefing outside of the Department that it is on a different trajectory for building standards other than the ones that apply to every single building that you might be living in.

Q127 **Chair:** I just have one point. Obviously, social housing providers are going to build properties and then keep them for a long time, which makes them different to private sector developers. A concern that has been around—I am not sure how far it has been expressed—is that you buy something that is okay now but it goes wrong in 40 years' time. If a bath goes wrong, you put a new bath in, in a traditional house. If it is a pod and the pod manufacturer is not there at some point down the line, what do you do then?



Wayne Hill: It might be an individual. There is no guidance on this. As a business, you have to make a decision. The way we have tried to mitigate this is by making everything we are developing agnostic to the system, and replaceable with traditional if it needs to be. If we have a pod, the materials that make the pod are exactly the same materials. You might have made that bathroom on site using exactly the same pieces; it just happens to have been configured within a factory and then brought to site. If that steel in the pod fails, the steel in the wall may have failed. Hopefully we can do like-for-like replacements.

We are trying to mitigate, to make sure there is no technology that leaves us vulnerable later, should a particular company or technology no longer be available. Everything we build should be replaceable. We have even had our own experiences where an MMC supplier has not made it through the duration of the construction. Luckily, again, we designed it in such a way that we could switch out to traditional construction in an emergency to address any vulnerabilities. It is an industry with a lot of attrition; it is quite volatile; we cannot always just cross our fingers. We have tried to factor that into our methodology. That is okay for us. What I do not know is how we are perhaps expelling that methodology to others around us. Again, Trina, you might be able to give an answer on that.

Trina Chakravarti: I would make two additional points on that. The first is on standardisation. If we can do more to standardise products on the supply side, it makes interchangeability easier. If a housing association is developing a product and an offsite provider is not able to fulfil halfway through, the housing association is not left in the lurch; it can use a different provider to finish that scheme.

The other thing is that the manufacturing process lends itself very well to the digital tools that are now available, including BIM, as we heard in the previous session. The ambition from the housing association side is that you use the designs that were first created when you started to think about how the home was going to look and be built. You then use those digital tools to make really smart decisions about your asset management and repair. Over time, you can imagine a scenario where a particular house or a particular thing is failing and you can start to bring out trends and make really smart decisions in strategic asset management, so you are replacing things before they get broken or choosing a separate replacement component that might be better than the one you are using. There is something around standardisation but also the opportunity afforded by digital tools.

Q128 **Chair:** Are you rolling that out to members?

Trina Chakravarti: It is absolutely part of the plan for Building Better. I know it is similar for others like Homes for the North as well, yes.

Lord Porter of Spalding: It has put the fear of God in me. Everybody is going to have the same bathroom and it is going to be changed after 20 years whether you like it or not. It must be an age thing, I think.



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Again, every product that goes into a home should meet a standard that says it is fit for purpose. If it is fit for purpose, it should not matter where it comes from, should it? If we all have to have the same bath, the same toilet, the same kitchen sink, the same kitchen cupboard because that is the only way we can make it work, we have failed before we have even started. In the private sector, the last thing you want to buy is something that somebody else has bought. You will not want the same as them; you will want better than them and different to them. I do not understand why people living in the social sector should be treated any differently.

Trina Chakravarti: I totally agree with you, Lord Porter. The only thing I would add is that, when I am talking about standardisation, I do not mean down to the component level, that the toilet or the sink should be the same, but even a general size. At the moment, bathroom pods are all of different lengths and widths. Even some standardisation in terms of general heights could go a long way. Then you could have a lot of flexibility inbuilt within that. From where I am coming from, that is at least what I meant by "standardisation".

Wayne Hill: I can probably clarify that as well. Someone used a very good saying recently, which is that we aim to standardise the invisible but bespoke the visible. To someone buying, it would be no different to any other house. On the question of having the same bathroom as everyone else, I recently talked to someone who said the same thing. They said, "I do not want to have the same bathroom that my mother had 30 years ago". I said, "You already do. You have a bath, next to it is a sink and next to that is a toilet". It just so happens that we redesigned that bathroom a million times since the 1980s, but it is the same bathroom. The only different parts are what we are talking about, which is the actual unit. The sink itself is different; the toilet is different, but the configurations have not changed that much over 40 or 50 years.

When we are talking about standardisation, we are not talking about having a cookie-cutter bathroom everywhere. We are just talking about standardising that which we can, and enabling us to have a bit of flexibility on that which we want to be unique and different for each room.

Q129 **Chair:** Is there not a problem here? If something is so specialised, when it goes wrong, you have to replace the whole of it rather than the part of it that may be broken. That is often the problem, is it not? The extra costs occur because you cannot get the replacement bit; you almost have to start again. Is that where the major costs are going to come in unless we are careful?

Lord Porter of Spalding: The costs are going to be in the fabric of the building rather than the fixtures and the fittings inside the fabric. It is the fabric that is going to be the problem. If you have a high-rise building made of steel and the steel fails, it does not matter how good your bathroom is; you ain't going to want to live in there anyway.



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That is the issue. What is the fabric of the building made of? How durable is the fabric? Can it live with people who might not give it much care and attention on a yearly or monthly basis, or do whatever maintenance you are supposed to do to the property? Will it be able to withstand that? Will it be able to withstand a young family beating the hell out of it compared with a nice elderly couple who just go out dancing once a week or whatever?

The cladding on some of these properties—I must have seen hundreds of bloody non-standard constructions now—is fibreglass bricks in panels that look like bricks. I am a brickie by trade. Those buildings look fantastic. I asked the guy, “Will they be as durable, though? If I build something out of masonry and a kid throws something at the wall, it is not going to shatter all of a sudden”. They took a hammer to it, and it is much more durable than it would have been if I had built it out of bricks, because at some point the corner of the bricks would have busted off. It is that we should be worried about.

It is the durability of the fabric of the building, not the individual bits and pieces that fit in it. If you fit something to tiles, it does not matter if it breaks and comes off, because the tiles are still there. If you put a sink on and then you tile round it, I can guarantee you are never going to find a sink that fits back in the hole in the tiles again. It is that. How much can we do to make it survive that change? God forbid that we all have to have the same, though.

Q130 Liz Twist: I want to ask about skills and training. Lord Porter, can I start with you? There is a sense that the wider adoption of modern methods of construction will require a new programme of skills training in terms of both educating young people and re-skilling the existing workforce. Would you like to see control of this programme shared between central Government and local government? How might that work?

Lord Porter of Spalding: All skills training should be done at a local level anyway, not at a national level. People should be trained for the jobs that are likely to be available in their area, not for the jobs other people think they should be trained for. I really cannot see that moving to offsite construction requires a more skilled workforce. All of the types of manufacturing that I have seen require a lower-skilled workforce, because you are replicating individually skilled manmade parts on a building site for machine-made production line products. It is a bit the same with cars. The people who work in the car industry now are very well skilled, but compared with the people who hand-built cars they are not anywhere near that. People in factories replace robots; they do not replace skilled craftsmen.

Q131 Liz Twist: The skills needed can vary according to the type of construction, can they not? If you get a ready-constructed building to put on a pad somewhere, that is one thing, but there might be different kinds of construction. There might be metal frames and so forth. Is there a need to develop those skills more?



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Lord Porter of Spalding: You will not be able to use a product unless there is a workforce capable of using it. The industry needs to have a workforce to suits its materials, but if you are building at scale offsite construction units you need a less skilled workforce. My workforce is largely food production and value-added food production. Most of the skills they have learned on those production lines are transferable with the same sorts of plug-and-play things you were talking about in the previous session. Most of those people are not skilled tradesmen. They are skilled operatives on a production line.

It is one of the advantages of using non-standard construction methods: it means you have a wider workforce. You do not need to train somebody for three years in an apprenticeship to lay bricks when you just want them to fit that component part, fit that component part and so on. The difficulty is how you keep them engaged in the work they are doing, I would have thought, rather than whether they are skilled enough to do it. In terms of the principle of skills, it should not be a national issue; it should be a local issue. Skills training should all be done locally.

Q132 **Liz Twist:** Mr Hill and Ms Chakravarti, several written evidence submissions cited the alignment of training with industry needs as being crucial in moving forward with MMC. Can housing associations have a role in designing and delivering training to suit their needs? Are there any good examples of that already?

Trina Chakravarti: I have mixed views on this, actually. Generally, housing associations have a role to play in employment and training in their communities in general. A really good example of a housing association doing this specific to MMC is Accord. It has opened a factory in the Midlands at the end of last year, and it is employing and training 35 local people to run that factory. I guess the reason my views are a bit conflicted is that I can see where training on MMC specifically would happen where a housing association buys or tries to own a factory. Not all housing associations are there yet. You have Swan, which I think some members of the Committee are going to visit in a couple of weeks, and Accord, which are opening a factory. Others just want to develop those skills over time before investing in the supply chain. That is more of a long game. In the long term, yes, housing associations could have a role to play.

As a side point, I wanted to mention the T-levels. I know that onsite construction is being looked at, and arguably there is a role for offsite construction to be included in that as well.

Wayne Hill: It is probably a twofold answer. It is a bit of both. As we expand on our journey, we have an academy and we fully expect to incorporate the new skills we require as a business for MMC into that academy to bring people through. At a national level, we have noticed that within the educational programmes of professional bodies in the construction industry generally, from architects to costing and



construction, there is not really anything significant at the moment that covers MMC and the principles of DFMA.

In conversations and in business planning, we lack the ability to understand a manufacturing model working within the construction industry. We train for construction skills. Whereas we can train locally and we expect some germination from our business, in order to get a good buy-in for this and to get that knowledge ready, so that when we are ready as an industry everyone is training up for this, there is a large role, maybe centrally, to be played with the professional educational facilities and bodies to help lift up their skills. That will complement us in the long term.

- Q133 **Liz Twist:** Ms Chakravarti, the written evidence from the National Housing Federation suggested that the Government could have an important role in supporting the development of MMC, particularly through including it in the design of apprenticeships and T-levels, which you touched on. Is MMC being given enough importance in the T-levels that are being rolled out from September 2020?

Trina Chakravarti: I do not have a specific view on this. If it is okay, I would like to come back with some thoughts to the Committee later on.

- Q134 **Chair:** I have a final question. What one major change could be brought about to ensure that MMC plays a larger role in housebuilding in the future?

Wayne Hill: We do think about this. I listened to the previous session, so I am aware that I do not want to repeat anything that is within your plans or your thoughts at the moment. The main one we have observed is that, while the response of industry, particularly the housing sector, to the Farmer review, Mark's report, has been brilliant, there has been a lot of repetition. We have seen a lot of companies all going off to solve the same problem and all using their own capital to do so. We have seen a lot of crossover, et cetera. Whether through some sort of centralised body or otherwise, we need a bit more visibility.

Our concern is this. There are some really good case studies out there as to how to make this work properly for different types of organisations within the supply chain, as it were, and there are examples of where it can be implemented incorrectly, and we have seen some attrition and some fails. We think that some of the businesses going out might not always be on the right path, and some maybe do not know they are. Although we are right at the beginning and we have set everyone up with the challenge, we still think there would be a great benefit, not just to my company but wider in the industry, in having a bit of guidance to help everyone in the business make this journey. We are asking everyone to go from traditional to MMC. For every business, that is a different journey and it has a different solution for them. We are not really telling them how to do it successfully.



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We are concerned that, with too much attrition, we will end up with a false start and then we will be back here in 20 years talking about what a wonderful opportunity MMC could be for our industry. We know the lessons of the past, and we know that without guidance we can run away with a lot of things as an industry. If there is any way to help and support with that, and give the industry a bit of guidance, that would be really helpful.

Trina Chakravarti: For me, it is the thing I mentioned previously. On the demand side, the one biggest thing would be supporting the aggregation of demand. The ambition is absolutely there from the housing association side. Whatever Government can do to support that would be hugely beneficial. If you do not mind me cheating a little, one thing I mention on the supply side is support with building that evidence base. That is the biggest thing holding back housing associations at the moment.

Lord Porter of Spalding: Needless to say, the last thing I want out of Government is any more guidance about anything. The less the Government interfere with how we should do something, the better. We need to find a way to bring the cost down. Cost is the single biggest barrier at the moment. If it is more expensive to build something that is new and relatively untested compared with something that has been around for a few hundred years and that we know works, why would too many people take the risk of investing into it?

I am not sure how it should be done. The Government might decide to do some interest-free capital loans to people to set up factories or—I do not know—roof tax however many houses they knock out of it after they have built it, but somehow the Government need to find a way to give people the confidence that it is worth investing in a factory to make some things at a price that is currently cheaper than traditionally built. If it is not cheaper, we are not touching it. There is absolutely no way I would spend my money on buying something that is more expensive, and untested and untried by time.

Q135 **Chair:** It is getting the product right, but also getting the aggregated amount of that product up to a level where it starts to be cheaper. It probably needs some assistance and input from Government to make it happen.

Lord Porter of Spalding: Yes.

Chair: Thank you very much indeed for coming this afternoon to the Committee and giving us evidence.