



West Midlands
Combined Authority

Housing & Land Delivery Board

Date	7 July 2021
Report title	Advanced Manufacturing in Construction: Proposed Update to the Definition Used by WMCA
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Report has been considered by	The AMC work has been actively designed and co-developed with officers on the AMC Officers Working Group and members of the AMC Taskforce. This specific report was considered and endorsed at the Delivery Steering Group on 16 June 2021.

Recommendation(s) for action or decision:

The Housing & Land Delivery Board is asked to:

- (1) **Consider and agree** the proposal to **update the AMC definition used by WMCA to focus on Pre-Manufactured Value** as opposed to restricted AMC categories.
- (2) **Subject to the above, agree** the proposal to explore **options for a new funding methodology** that takes into account the wider benefits of AMC, including those related to build out rates, build quality, skills and jobs creation.
- (3) **Endorse** the high level **principles of a funding ask** to HMG which has been worked up with AMC Officer Working Group and the AMC Taskforce, seeking additional funding to accelerate delivery of AMC, investor confidence in AMC and growth of the region's AMC sector.
- (4) **Note** the Officer Working Group and AMC Taskforce are involved in the AMC programme of work and ongoing refinement of the funding ask to HMG, both of which have been agreed as **key interventions of the approved Housing and Land Portfolio Covid19 Recovery Plan and is a major deliverable in the Housing and Land Board 2021/22 Deliverables.**

1.0 Purpose

- 1.1 The purpose of this paper is to outline the proposal to explore updating the existing AMC definition to more closely align with a) regional specialisms b) national modular construction strategy and c) the Combined Authority's retrofit programme.
- 1.2 This paper also details a revised work programme so that the updated definition continues to support WMCA's aspirations for its AMC programme and Covid-19 recovery strategy, including delivery of higher quality homes, new skills and employment opportunities.

2.0 Background

- 2.1 The AMC work programme and its outputs were identified as a key **Housing and Land portfolio deliverable** for 2021/22 and is a key component of the region's **post Covid19 plan and Recharge strategy.**

The AMC work programme overseen by WMCA was outlined within the AMC Routemap which was agreed by the Housing & Land Delivery Board in November 2020. The primary purpose of the routemap was to ensure that AMC delivers housing and job numbers, but also social value, inclusive growth and environmental benefits. As a reminder, the Board previously agreed to define AMC within the region as categories 1 and 2 of MHCLG's MMC Definition framework.

- 2.2 It is important to note that AMC and MMC, though often used interchangeably, are terms which describe different outputs. MMC is a term defined by MHCLG to cover a broad range of pre-manufacturing techniques in construction which aim to improve quality, programme efficiency and reduce material waste. AMC, describes a sub-set of MMC technologies which focus specifically on advanced construction techniques, typified by the fundamental use of digital technology throughout the design and construction process, automation, high quality materials and performance and potential for mass-customisation. Both of these terms were clarified in the routemap.
- 2.3 Alongside the approved AMC routemap, **an investment case for an AMC Acceleration Fund has been prepared by WMCA officials in partnership with the AMC taskforce and a working group of local authority officers.** Talks are ongoing with government to secure this new investment. This funding if secured would be used to increase uptake of AMC in the region by bridging the gap between the cost of AMC vs traditional methods of construction and providing the certainty business needs to invest and develop in new technologies and training in the region.
- 2.4 There are significant links between the aspirations of WMCA's AMC programme and its Retrofit programme. In March 2021, the Energy and Environment Board agreed a series of actions to deliver its Five Year Plan, including a proposal to develop a Sustainable Market for Affordable Retrofit Technologies (SMART) Hub. This will involve working closely with skills providers and the supply chain to deliver new retrofit products at scale in conjunction with wider MMC initiatives. Identifying synergies across these two programmes could enhance the region's AMC pipeline, making it a more attractive proposition for investors, suppliers, developers and skills providers.

3.0 Updating the AMC Definition

- 3.1 The benefit of previously aligning WMCA's AMC definition to MHCLG's MMC framework was that it was well-recognised in industry, making it easier to communicate the region's expectations and aspirations with its partners. As a reminder, categories 1 and 2 include volumetric, modular and panellised solutions and were targeted by WMCA as the most advanced solutions which were most likely to deliver efficiencies.
- 3.2 Throughout the routemap development process, it was identified that the West Midlands had a number of other manufacturing and construction specialisms that were not necessarily reflected in this definition. Furthermore, while the definition targeted the most advanced forms of construction available now, it could be seen as restrictive as the industry grows and other forms of AMC come forward. **An action identified within the approved AMC routemap was to explore options to amend the definition to reflect these findings and identify a more accurate approach to assessing the value of AMC.**

3.3 One commonly recognised approach to quantifying the added value of AMC is to assess its Pre-manufactured value, or PMV. PMV captures the value that is created as a result of completing work away from the site. It is calculated by taking the gross capital cost of the project and deducting the site overhead costs and the site labour costs. The result of this is then divided by the capital cost and is reflected as a %. A high level of PMV would be about 75-80% for a fully volumetric building, but good levels of PMV can be achieved with other categories, delivering efficiencies and reducing build time. Figure 1 and Table 1 demonstrate where different types of MMC/AMC would fall on this spectrum:

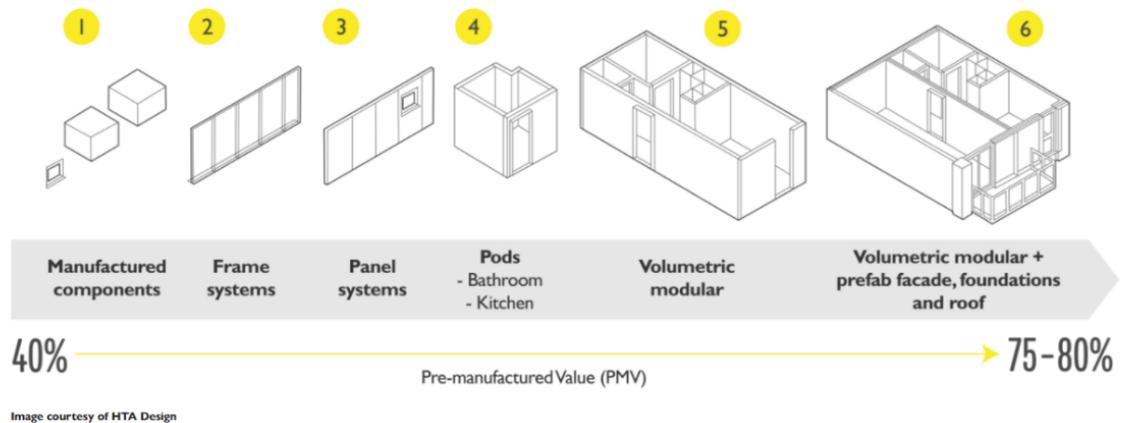


Figure 1 PMV Spectrum, taken from: <https://akerlof.co.uk>

Rating	Description	Systems covered
Low	<ul style="list-style-type: none"> - Steel-framed construction or in-situ reinforced concrete frame - Possibly some use of panels or other offsite elements 	
Medium	<ul style="list-style-type: none"> - Project intentionally designed to increase use of standard or repeatable elements e.g. non-structural panels, pods - PMV > 50% 	
High	<ul style="list-style-type: none"> - Offsite elements comprise a substantial proportion of the building (e.g. SIPs, CLT or volumetric modules) - PMV > 70% 	

Table 2 PMV Spectrum

3.4 It is proposed that the **AMC definition used by WMCA and approved by the Housing and Land Board is now updated to reflect PMV% alongside AMC**

approaches. Beyond providing a more accurate measure of efficiencies delivered through the construction process, there would be a number of advantages to adopting this approach, including:

1. Alignment with national strategy: PMV is recognised nationally by industry and government. Adopting a similar measure would allow WMCA to more closely align its work with other regions and government bodies and communicate expectations, whilst still supporting us to target the most advanced forms of construction.
2. Greater applicability across schemes: PMV is more easily applied as a proportion of a development, particularly where schemes include multi-dwelling blocks which are not suitable for hybrid traditional/AMC build, but could not support 100% AMC delivery within the current definition.
3. Supporting growth and innovation in the region's construction industry: Defining AMC in terms of PMV% rather than restricted categories keeps open opportunities for other MMC categories to emerge in the region e.g. hybrid multi-category MMC solutions where several smaller component manufacturers are brought together (like in the automotive industry).
4. Future-proofing WMCA's AMC programme: Targeting a PMV range provides more flexibility to toughen or ease the target as industry responds, without undermining our aspirations.
5. Supporting growth and innovation across new build and retrofit supply chains: AMC/MMC is identified as a key component of delivering retrofit at scale. There are synergies across these programmes and new build and retrofit schemes could utilise the same technology and products across the MMC spectrum. Expanding the definition would ensure both programmes benefit from economies of scale and innovation in the supply chain.

3.5 If the Board agrees to update the definition, it is proposed that WMCA explore options for a new funding appraisal/methodology to support a more flexible approach to delivering AMC on the ground. WMCA could, for example, look to taper funding in line with an uplift of PMV% or to taper the PMV% requirement in line with site size. This would create new opportunities to drive AMC uptake across all sites, and not just those over >200 units as is currently the requirement in the SCF. In collaboration with the Expert Advisory Group, Officer Working Group and Commercial Property Forum, WMCA would develop and test the impact of this methodology on sites of varying sizes and in different geographies, to quantify the impact on a) use of AMC, b) viability and c) industry appetite.

3.6 PMV is a quantitative target and it is essential the region doesn't lose sight of the reasons it is driving AMC. PMV is a valid approach for bringing down the cost of a development by improving productivity and other efficiencies,

however, it does not take into account other quantitative and or qualitative measures. It is proposed that officers look to develop a 'balanced scorecard' approach to assessing AMC development as part of this methodology, as detailed in the AMC routemap. This would give suitable weighting to build quality, long term operational expenditure and upfront capital expenditure as well as wider social and environment benefits. The scorecard could support WMCA in negotiating for specific types of AMC, identifying AMC pipelines that maximise value/limit cost or increasing the percentage of AMC on certain sites

4.0 Principles of the AMC Investment Case to Government

4.1 Following the publication of the Recharge for the West Midlands in Q2 2020, WMCA submitted an initial AMC investment case to government, seeking £50m of funding to supercharge the region's construction and manufacturing sectors, bringing forward an additional 5,000 AMC homes, 600 jobs and 250,000sqft of manufacturing space.

4.2 The investment case focused on making the region a centre of excellence for AMC, provide a transparent pipeline and the investment necessary to support innovation and growth in the supply chain. The ask focused on 3 specific intervention areas, as below:

- Investment into new and upgraded manufacturing facilities for new build and retrofit products in the West Midlands, bringing the region's total annual AMC housing factory output to 6,500 units, creating 600 new jobs through direct employment and providing consumers with a greater choice of high quality AMC products.
- Investment into skills and training programmes which would support existing construction professionals and SMEs to grow their advanced manufacturing expertise, provide new higher and further education training opportunities and put in train learning opportunities at key stages two, three and four.
- Investment to enable significant additional AMC delivery through release of public sector land and upgrade of existing committed projects to 100% AMC. This would be supported by an AMC prospectus for manufacturers and investors, setting out a clear process for accessing funding and land, alongside a consumer campaign showcasing flagship new and retrofit AMC projects that demonstrate the quality and performance standards AMC can achieve.

5.0 Next Steps

- 5.1 Subject to the Board's agreement, WMCA will now work closely with the Expert Advisory Group, Officer Working Group, Commercial Property Forum and other partners to determine an appropriate PMV% framework for sites in which WMCA invests under the Single Commissioning Framework, and test this approach with commercial partners.
- 5.2 In parallel, work will begin on producing guidance documentation that will ensure there is added value to this approach, recognising the need for AMC to drive quality, sustainability and new skills/employment opportunities alongside improved build out times.
- 5.3 WMCA will provide an update on progress of this work to the Housing and Land Board in Autumn 2021, and propose to amend the definition and targets in the Single Commissioning Framework shortly thereafter in line with its findings.

6.0 Financial Implications

- 6.1 There are no direct financial implications from the information contained in the report. The Single Commissioning Framework provides a single set of criteria and governance systems that will be applied to all applications for available devolved WMCA Housing, Land and Property Development funds, together with a consistent process and timelines for decision.
- 6.2 WMCA investment in any proposed Advanced Manufacturing in Construction projects would be governed and administered through the Single Commissioning Framework, WMCA Assurance Framework and in line with the accounting and taxation policies of the WMCA and HMRC.

7.0 Legal Implications

- 7.1 Section 113A(1)(a) of the Local Democracy, Economic Development and Construction Act 2009 gives WMCA a power of competence appropriate for the purposes of carrying-out any of its functions. Part 4 of The West Midlands Combined Authority Order 2016 (2016 No 653) confers that the functions relating to any economic development and regeneration in the constituent councils are exercisable by WMCA. Part 3 of The West Midlands Combined Authority (Functions and Amendment) Order 2017 confers functions corresponding to the functions of the Homes and Communities Agency has in relation to the combined area. Paragraph 10 (2) (a) of the 2017 Order confers the function of improving the supply and quality of housing to the Combined Authority, 10 (2) (b) to secure the regeneration or development of land or infrastructure in the combined area, 10 (2)(c) to support in other ways the creation, regeneration or development of communities in the combined area or their continued well-being and 10 (2)(d) confers the function of contributing to the achievement of sustainable development and good design.
- 7.2 It is noted that the purpose of this paper is to update the Housing & Land Delivery Board on the work undertaken by WMCA, the AMC Officer Working Group and Expert Advisory Group in producing a routemap for accelerating

Advanced Manufacturing in Construction in the region. Legal advice should be sought as and when required in the development of the AMC strategy and routemap. Once the AMC requirements have been established the existing requirements for AMC in the Single Commissioning Framework would need to be strengthened and implemented through the funding agreements on a case by case basis.

8.0 Equalities Implications

8.1 There is no equality impact in relation to this report.

9.0 Inclusive Growth Implications

9.1 The proposed changes to WMCA's approach to defining and valuing AMC would ensure it grows the region's AMC sector in an equitable way, maximising economic benefits, housing quality and job/skills opportunities across the region's communities.

10.0 Geographical Area of Report's Implications

10.1 The research presented applies to the whole WMCA geography. The proposed AMC definition and PMV framework would be used to guide WMCA investment decisions across the entire geography of the WMCA area.

11.0 Other Implications

11.1 There are no other implications.

12.0 Schedule of Background Papers

12.1 There are no background papers.