

THE JOINT COMMITTEE ON HOUSING, LOCAL GOVERNMENT AND HERITAGE

MEETING OF THE COMMITTEE TO DISCUSS MODERN METHODS OF CONSTRUCTION

TUESDAY 9 MAY AT 3.00 PM IN COMMITTEE ROOM 3, LH2000, LEINSTER HOUSE

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RIAI OPENING STATEMENT

PERSONAL INTRODUCTIONS

Good afternoon, I am David Browne, an architect, representing the RIAI. I am a former President of the RIAI and a current director of RKD Architects, a large Dublin headquartered practice, which works on design, project management and sustainability across many types of building from commercial to industrial, university and residential both in Ireland, throughout Europe and elsewhere.

Good afternoon, I am Pat Kirwan also representing the RIAI. I am a director of C+W O'Brien Architects, an architectural practice specialising in Modern Methods of Construction, we are based in Dublin. I am also a co-founder and current board member of MMC Ireland, an independent organisation representing those that operate within the MMC sector in Ireland.

RIAI

The RIAI is committed to providing guidance and advice to architectural practices and practitioners with the aim of promoting high standards and high-quality design at the heart of the construction process, to facilitate a collaborative approach and enabling innovation in the built environment.

GENERAL INTRODUCTION

Business as usual in building design and construction will not sufficiently address the urgent challenges of climate change and Ireland's growing population and consequent housing crisis or the added difficulties of labour shortages and gender imbalance in the construction sector. Embracing Modern Methods of Construction (MMC) through a Design for Manufacture and Assembly (DfMA) approach to design has the potential to help address many of these critical issues.

DfMA and MMC, if adopted at scale in Ireland, can have an important role to play in meeting the targets of the National Development Plan (NDP) by helping to address current significant productivity, labour and skills challenges. It is important to understand that the application of DfMA and MMC in both the public and private sectors in Ireland cannot be achieved by the construction sector acting alone. MMC enabled by DfMA requires a profound change not only in the approach

to design, manufacture and assembly, it also requires fundamental change in the financing, bonding, insurance, procurement, contractual, technical standards, regulatory systems and approval processes that currently primarily support more traditional approaches to construction. Change will require input from government, private developers, manufacturers, the banking and insurance sectors, statutory authorities and government agencies.

There is currently a low level of MMC manufacturing capacity in Ireland, particularly for volumetric modular construction. To enable establishment of MMC at scale this shortfall could be addressed by the public and private sectors through incentivisation such as

- The setting of mandated targets for the use of MMC in public sector building programmes to help establish a consistent level of demand.
- Potentially providing annual unit requirement pipelines to be delivered through MMC across various sectors, in particular, housing, education and healthcare.

These initiatives will take some time to establish and the sooner that they are adopted, the sooner MMC can contribute at scale to the more productive and faster delivery of construction projects.

MODERN METHODS OF CONSTRUCTION (MMC)

Traditional construction has been employed for centuries to build homes and other buildings. Typically, traditional construction methods take place mainly or entirely onsite, invariably these are sequential processes where one process cannot begin until the preceding task is complete. The Irish construction sector is largely characterised by a culture of seeing construction as a one-off bespoke process from one project to the next where traditional construction methods have predominated.

Construction projects by their nature are based on assembling constituent components; the smaller the number of components that must be assembled on site, the more productive and predictable the project will be. Using pre-assembled components to improve productivity has long been used in manufacturing industries. MMC creates a shift away from traditional onsite construction and assembly to offsite manufacturing style processes like those in the automotive sector.

The concept of aligning construction with manufacturing style processes is not new to the construction industry. Prefabrication and industrialisation of construction have been used for decades. The use of industrialised construction methods in Irish housing dates back to the 1960's where large structural precast concrete wall exterior prefabricated cladding panels were used to build seven fourteen-storey towers in Dublin.

What makes MMC different to the previous attempts to rationalise construction through prefabrication and industrialisation are the wide reaching and holistic impact not only on design, procurement, and construction but on societal and environmental concerns.

BENEFITS OF MMC

MMC offers many benefits over traditional methods of construction and these are key to addressing the demands of high output levels in the housing market. While MMC alone will not "fix" the low productivity issues of the overall construction industry, they are a driver for a systematic change in culture and process that will also improve on the environmental impacts of traditional methods of construction.

The main benefits of MMC being reported are:

1. **Increased Productivity & Innovation**

In most cases, MMC can be carried out independently of ongoing site works, insulating it from issues with onsite construction programmes and project management. Greater programme certainty and increased levels of productivity can be achieved through factory-based production.

2. **Higher Quality**

Standardisation of components in a controlled factory environment can drive higher construction quality and produce significant reductions in defect rates.

3. **Improved Site Safety and Health & Wellbeing**

There are many benefits to those working in a factory-based controlled environment. Safer working environments can be achieved, and onsite safety is improved.

4. **Reduced Environmental Impact**

Optimising component production not only increases productivity but also reduces material waste. Carbon emissions can be reduced by lowering material transport cycles and increasing rates of material recycling.

CURRENT BARRIERS TO A WIDER ADOPTION OF MMC WITHIN THE IRISH CONSTRUCTION SECTOR

The barriers to adoption of MMC have been well characterised at an international level, these barriers equally apply to the Irish construction industry. A UK cross industry group was established in 2004 to examine the barriers to the greater use of MMC in the context of housing, the barriers identified in that report were reinforced by a follow-on survey of the top 100 housebuilders in the UK when surveyed in 2005. More recently, in an Irish context, a 2021 EY report commissioned by Enterprise Ireland found similar barriers to adoption as those identified in the UK back in 2004.

1. **Cultural Change**

MMC moves many traditional construction methods from site to factory-based settings, design methodologies need to adopt a forward-looking approach where the manufacturing, logistic, planning and assembly phases of projects are considered at an early stage. Transition from traditional to MMC requires a major change in the way we design, procure and construct buildings.

2. **Procurement Strategies**

The cyclical nature of the construction industry in terms of demand, investment and skills poses a challenge for factory lead manufacturing processes. Supply chain capacity and security is the Achilles heel of MMC adoption.

The fragmented nature of procurement in the industry restricts its ability to build economies of scale, which benefit the factory line type production processes that many forms of MMC embody. Developing procurement at scale, either at project or central Government level with newer funding models, and possibly mandates for use of MMC, could help build supply chain capacity resulting in increased competition within the market and help reduce capital costs and as such the cost of construction.

3. Skills and Knowledge

Developing a production and manufacturing approach to construction requires a paradigm shift in the design and construction process. This shift will make many current construction roles obsolete however; new roles will be developed and will require workforce upskilling.

The transition from site lead to factory-based processes will require less manual labour and more manufacturing, digital and management skills. These new requirements are set against a backdrop of existing severe skills shortages within the industry.

RIAI – UPSKILLING OF DESIGN PROFESSIONALS

The RIAI understands the need for a change in the design process to streamline adoption of MMC at the construction stage. It has recently published a Design for Manufacture and Assembly (DfMA) Report and Guidance <https://www.riai.ie/whats-on/news/riai-design-for-manufacture-and-assembly-dfma-guidance> . This report puts forward a methodology for a more collaborative approach to the design and procurement of the built environment and contains specific guidance on the use of Building Information Modelling (BIM) and the embedding of sustainable principles. Designing for manufacture and assembly (DfMA) at the early design stages with specialist contractor input where required increases project team collaboration and reduces the risks of abortive design work and drives value creation through achieving a balance of aesthetic design, increased environmental impacts, constructability, construction programme and cost concerns.

ADOPTION OF MMC

The adoption of MMC will be important for the Irish construction industry to enable us to meet the challenges of delivery and to stay competitive. The industry is working to together through the Construction Sector Group's Build Digital initiative and the professional organisations like the RIAI are working to support and educate our members. For the Government's part it is essential that a detailed pipeline of work is developed through cross department collaboration to ensure that the industry can plan and meet the demand. A detailed pipeline would help in building confidence to allow the necessary investment. The current [Investment Projects and Programmes Tracker](#) and updated [MyProjectIreland](#) interactive map are not sufficiently forward looking and do not appear to have had cross departmental planning. The second area requiring change is in relation to contracts and consultants appointments - both will need adaptation to reflect the changing work flows and responsibilities – it would be important that they balance the risk appropriately and that they reflect the collaborative nature of the work.

The move to DfMA and MMC delivery is an exciting opportunity for the industry and the RIAI has and will continue to work to develop the necessary education and support mechanisms. We will now be looking to government to work with us bring forward the necessary information and contract modifications to allow for a successful change in the way we design and deliver our buildings and infrastructure.

Thank you