Australian Institute of Architects

# ABCB MODERN METHODS OF CONSTRUCTION (MMC) CONSULTATION

Industry Consultation

**NATIONAL POLICY**

**Submission date: Aug 29th 2025**

## ABOUT THE INSTITUTE

The Australian Institute of Architects (Institute) is the peak body for the architectural profession in Australia. It is an independent, national member organisation with around 14,000 members across Australia and overseas.

The Institute exists to advance the interests of members, their professional standards and contemporary practice, and expand and advocate the value of architects and architecture to the sustainable growth of our communities, economy and culture.

The Institute actively works to maintain and improve the quality of our built environment by promoting better, responsible and environmental design.

## PURPOSE

- This submission is made by the Australian Institute of Architects (the Institute) to provide input on Modern Methods of Construction for the Australian Building Codes Board Consultation
- At the time of this submission the National President is Adam Haddow
- The Chief Executive Officer is Cameron Bruhn

## CONTACT DETAILS

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The Australian Institute of Architects recognises the unceded sovereign lands and rights of Aboriginal and Torres Strait Islander peoples as the First Peoples of these lands and waters.

This recognition generates acknowledgement and respect for Aboriginal and Torres Strait Islander Countries, Cultures and Communities, and their ways of being, knowing and doing.

Caring for Country practices including architecture and place shaping have existed on this continent since time immemorial.

The Institute recognises a professional commitment to engage and act meaningfully through reciprocal partnership and relationships with Aboriginal and Torres Strait Islander peoples. Together we will support and develop the emergence of new possibilities for our shared future.

# BROAD COMMENTS

We note that the Australian Building Codes Board (ABCB) Modern Methods of Construction (MMC) Consultation has a series of questions to answer within and at the rear of the paper.

The Australian Institute of Architects wishes to provide comments relating to questions 8, 9, 19, 20, 21 and 23.

## Strategic Context and Policy Alignment

The ABCB's MMC consultation is a response to the 2024 National Competition Policy (NCP) reform agreement, supported by a $900 million Productivity Fund. It aims to:

- Develop national definitions for MMC within the National Construction Code (NCC).
- Launch a voluntary certification scheme for MMC manufacturers by mid-2028.

This could align with the Australian Institute of Architects' (The Institute) 2025 Federal Election Priorities, which advocate for:

- A Federal Government Architect to embed design leadership in MMC policy.
- A transition to net-zero-ready construction through modern, integrated manufacturing.
- Architect-led innovation in housing, climate resilience, and circular economy practices

## Science-Backed Benefits of Quality MMC

- **Climate Resilience & Adaptation** – Enables faster, safer housing delivery in disaster-prone areas, with prefabrication allowing bushfire- and flood-resistant designs in line with WHO and ASBEC climate-adaptive calls.
- **Net-Zero & Grid-Interoperability** – Supports airtight, energy-efficient design and renewable integration, delivering up to 43% lower GHG emissions and 83% less construction waste.
- **Health & Equity** – Factory-controlled environments cut injuries and mental stress, while enabling rapid, affordable housing delivery to address equity and homelessness.
- **Circular Economy** – Facilitates disassembly, reuse, and material traceability; identified in the Productivity Commission's 2025 interim report as critical for circular uptake.
- **Precinct & Systems Planning** – Provides standardised, scalable housing that aligns with precinct-level planning, supported by Institute and GBCA frameworks for modular urban development.

## QUESTION 8

*How could a nationally recognised scheme increase industry and consumer confidence or reduce risk or uncertainty? Please explain your answer.*

Building 4.0 CRC's *When Prefab Hits the Ground* (2021)[i] highlights the value of a nationally recognised scheme to reduce risk and uncertainty through clear standards, improve consumer confidence via third-party validation and quality assurance, and help prefabricators address regulatory, insurance, and financial barriers. Such a scheme could also strengthen branding and advocacy, positioning prefabrication as a leader in quality and sustainability rather than a niche option. To be most effective, it should prioritise 'design value' for modularity, ensuring design excellence drives sector transformation. The *Ellen MacArthur Foundation*[ii] identifies six design levers to accelerate circularity: develop tools to design and evaluate, interpret system dynamics, envision circular futures, create conditions for collaboration, build design capabilities, and rewrite the rules. Embedding these principles would support prefabrication as a pathway to quality, innovation, and sustainability while enabling industry, government, and consumers to embrace modular construction with greater confidence.

**Value across procurement, planning, design and construction**
From a Ministry briefing by early MMC adopters to the South Australian Government highlights:

- The need for a dedicated MMC Office or Taskforce, supported by independent experts. Its remit would be to reform procurement, streamline approvals, strengthen supply chains, and establish an industry hub for training, research and development—positioning South Australia as a national leader within a decade.
- Traditional lowest-cost tendering is incompatible with MMC, which depends on collaboration between designers, contractors, and supply chains. More effective are models such as Early Contractor Involvement, capability-based Design & Construct, or Alliance approaches.
- MMC also shifts construction toward safer, less physically demanding assembly, extending career longevity and creating stronger entry pathways for women. A continuing challenge is certification: current processes assume staged on-site inspections, yet modular work is often complete before delivery. Councils must instead rely on documentation and third-party reports, leading to inconsistency and resistance[iii].

**Design better systemically**
A stronger focus on "safety in design," 'design for disassembly' and the role of design professionals in Modern Methods of Construction (MMC) housing is critical, particularly given lessons from the commercial sector. Remote and regional housing projects face distinct challenges—limited skilled labour, environmental constraints, and long-term sustainability—that demand rigorous design oversight.

With weaker regulatory enforcement than commercial projects, these developments rely heavily on professional competence and ethical responsibility to ensure safety, durability, and cultural appropriateness.

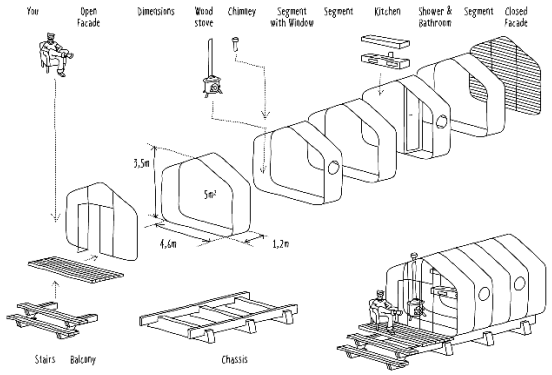
Principles of design for disassembly—modularity, lifecycle planning, and material traceability—highlight the need for early design decisions that enable adaptation, maintenance, and safe deconstruction. Applied to housing, these approaches reduce environmental impact, strengthen local employment, and empower communities. However, regulatory differences hinder uptake: NCC performance solutions (e.g., FirstRate 5) disadvantage smaller MMC shells due to NatHERS Handbook zoning rules, which assume notional internal walls and unrealistic usage patterns. This creates inefficiency, particularly for backyard granny flats now permitted in several states.

A new, standardised compliance pathway—drawing on the commercial DTS approach (e.g. wall/window ratios and combined U-values)—could streamline MMC approvals, enable standardised assemblies, and fast-track planning outcomes. This has proven effective in England[iv].

A nationally recognised scheme should enable design value by streamlining compliance and supporting innovation. It should:

- Provide DTS or standardised pathways that reduce reliance on complex performance solutions, lowering risk in cost and time, and overcoming approvals frameworks built for traditional on-site construction.
- Ensure DTS pathways feed total R-values of wall, roof, and floor assemblies into the CSIRO Housing Portal, building a dataset for postcode mapping, research, and forecasting upgrades in thermal performance and climate resilience—critical for retrofits.
- Align with planning approvals across jurisdictions to provide early certainty that MMC approaches are feasible.
- Apply to both metropolitan and remote housing production as MMC adoption expands.
- Fast-track approvals through pre-verified DTS-compliant assemblies.
- Provide a pattern book standardising R-values, BAL, hygrothermal ratings, and airtightness targets.
- Mandate airtightness exchange rates by typology, recognising differing requirements for housing, public, and health buildings.

**Designers leading with 'design value' over business as usual:**




"*The team adopted a holistic approach to the project, applying design thinking not only to the building, but to the funding model and procurement also. Undertaking a design feasibility and costing exercise that helped secure funding for the RFDS and validated a modular construction methodology over a traditional in-situ build.*

*The outcome, a 250m2 health precinct entirely fabricated in Adelaide and transported then commissioned in Marree, encompassing four treatment rooms, dispensary, sterilisation, community space and virtual health facility with adjacent staff accommodation and shared living quarters."*

*DasStudio Website (2025)*

RFDS Maree by Das Studio– https://das-studio.com.au/project/rfds-marree/

Leading by design value, Wikklehouse of Amsterdam was designed by theatre set designers with the understanding that what is built must also be disassembled. This had led to a significantly valued small asset for investors or homeowners.

Welcome to Wikkelhouse

## QUESTION 9

What standards, assurances, or third-party validations should be included in this Scheme to increase confidence in the quality, safety and sustainability of prefabricated buildings or a component of prefabricated buildings?

The scheme should include:

- Life cycle analysis of prefabricated components.
- Environmental and performance data tracking, possibly using blockchain technology.
- Maintenance and service provision standards.
- Sector-wide branding and advocacy to shift perceptions.
- Third-party certifications for sustainability, safety, and quality[v].

The Scheme should reward high-performing building envelopes with incentives and standardised pathways. Benefits include:

- **Innovation in BAL and energy-efficient MMC** – enabling airtight, humidity- and ventilation-controlled homes with compact, lower-cost HVAC solutions (e.g., decentralised HRV for studios and refuges).
- **Assembly validation** – ensuring quality through standardised detailing of factory-built assemblies, prefabricated houses, and portable buildings for housing or worker accommodation.
- **Hygrothermal assurance** – factory construction avoids weather exposure, reducing mould risk common in traditional timber builds where wet-season enclosure traps moisture, undermines insulation R-values, and locks mould into the structure.

We call for standardised compliance pathways to streamline approvals / compliance and provide an incentive for adoption. This would provide the Government and private sector an opportunity to accelerate industry transformation and adoption of MMC methodologies or find the investors to accelerate the change.

**Certification Scheme: Strengths and Gaps**

Modern Methods of Construction (MMC) in Australia offer promising strengths, including a voluntary, cost-neutral certification scheme with robust traceability, third-party oversight, and alignment with global standards. These innovations support a clear chain of responsibility across the lifecycle of housing delivery—from design to installation. However, persistent challenges remain: fragmented definitions across jurisdictions, inspection regimes still tailored to traditional builds, and low consumer confidence due to historical stigma.

While organisations such as GBCA, ASBEC, and PrefabAUS call for harmonised standards and clearer classifications, a deeper challenge remains: whether conventional methods like concrete slabs are fit for Australia's future climate. Some modular homes are built upon concrete slabs. Alternatives such as Cross-Laminated Timber (CLT) floors can provide thermal mass while reducing long-term heat retention. To strengthen climate resilience, policy should also consider raised prefabricated systems that mitigate overheating, flood risk, and soil movement. Without this shift, MMC may improve efficiency but fail to deliver climate-adaptive housing. A key concern under current NCC 2022 provisions is overheating, driven by compliance methodologies. Mass timber floors, combined with adaptable insulation and ventilated cavities, are already proving effective in commercial settings and could offer similar benefits in housing.

**Massive Timber as Thermal Mass in Australian Housing**
Dewsbury and Chandler (University of Tasmania) conducted simulations comparing various construction materials—including concrete, brick, and massive timber—across different Australian climates. Their findings show that while thermal mass can improve energy efficiency, its placement and sizing are critical. In hot climates, poorly placed thermal mass (e.g., concrete slabs) can exacerbate overheating

**WSROC's Future Proofing Residential Development**
The Western Sydney Regional Organisation of Councils (WSROC) found that BASIX-compliant homes in Western Sydney become thermally unsafe under projected future climate scenarios. Homes designed for historical climate conditions failed to meet future resilience needs, highlighting the urgent need to rethink construction standards

## QUESTION 19

*What are the barriers and opportunities for the Scheme to support:*

- *Design for disassembly?*
- *The circular economy, in particular the reuse and recycling of materials?*

Observations from '*When Prefab Hits the Ground*[vi]*' include:*
Barriers:

- Lack of standardised design protocols for disassembly.
- Limited market incentives for reuse and recycling.
- Fragmented knowledge sharing across sectors.

Opportunities:

- Prefabrication inherently supports modular and disassemble design.
- Scheme could promote reuse-friendly materials and design principles.
- Support for retrofit and renovation using prefabricated components.
- Integration with circular economy goals through traceability and lifecycle tracking[vii].

Standardised MMC can assist designing for disassembly and circularity:

- Controlled conditions in material procurement and assembly allow for standardisation of components, facilitating traceability and the potential for reuse.
- Design for disassembly and circularity requires significantly increased input from Architects and Design Teams during design – education broadly of industry / government / client groups would be required to enable this, along with an understanding of suitable procurement models and design cost expectations.

Existing Houses:

- MMC should not be excluded from the large existing building challenge. With increasing focus on the existing housing stock and how to retrofit them to a standard thermal comfort and health suitable to future climates, the scheme could support similar MMC assembly skins that are designed specifically to adapt typical construction to the increased standard.

## QUESTION 20 & 21

How could a traceability framework support the circular economy?

**A traceability framework could**:

- Enable tracking of materials and components throughout their lifecycle.
- Support reuse, recycling, and refurbishment by providing material provenance.
- Facilitate environmental performance monitoring.
- Encourage accountability and transparency in supply chains[viii].

Material buy-back schemes at end of building life. Some of these exist within the fit outs supply chain such as Forbo Flooring scheme.

Modular buildings are being tested in alternate building ownership models, however this area would need significant development before we could expect to see meaningful adoption across industry. Digitisation of design construction processes associated with MMC could go a long way to enable this – we see this as a key to enabling traceability in construction. This would need to be supported by education and skills development.

Traceability of the supply chain and around MMC can also provide better solutions for Insurance and liability which currently sees non DTS systems as a greater risk from warranty providers. The scheme having international integration would also ensure easier Environmental Product Declarations (EPDs) to be managed centrally and transparency on the future needs for manufacturing and skills in Australia.

What traceability solutions might be used for the Scheme? Please explain your choice

**Suggested solutions include:**

- Blockchain technology for secure and transparent data.
- Digital twins to model and monitor building components.
- Smart tagging (e.g., QR codes or RFID) for physical tracking.
- These tools help ensure data integrity, accessibility, and interoperability across stakeholders[ix].

**Risks & mitigations**

- **Risk**: Variable certifier practice persists → **Mitigation**: Mandatory MMC Interpretations Protocol & training.
- **Risk**: Over-reliance on overseas evidence → **Mitigation**: ABCB **Equivalence Tables** + limited local verification.
- **Risk**: Performance gap at interfaces on site → **Mitigation**: Installation Code, blower-door & moisture verification triggers.

**Monitoring & evaluation**

- **Regulatory KPIs**: % of MMC homes approved via DTS/pre-approval for example target: >70% by 2027; median approval time reduction >30%
- **Performance KPIs**: Product traceability with metrics to assure verified airtightness (ACH50), thermal bridge psi-values, in-situ moisture checks at module junctions when built
- **Carbon KPIs**: Reported upfront carbon per dwelling and EPD

## OTHER COMMENTS

**Embedding Upfront Carbon into the traceability of products in the ABCB's MCC Strategy.**

Modern Methods of Construction (MMC) represent a critical enabler for meeting Australia's built environment ambitions at speed and scale. The Australian Building Codes Board's MMC Consultation comes at a pivotal moment, as governments implement *the National Urban Policy*, the National Adaptation Plan, new and existing Biodiversity Bills and Plans, and Renewable Energy Targets under the *Trajectory for Low Energy Buildings* and *Net Zero Sector Plans*.

Aligning MMC's proven strengths—climate resilience, net-zero readiness, circular economy outcomes, health and equity benefits, systems-based planning, and quality assurance—with these national priorities positions MMC not merely as a construction innovation, but as a strategic lever for achieving economic, social, and environmental objectives simultaneously. This alignment is essential if Australia is to deliver the scale of housing, infrastructure, and ecosystem restoration required in the coming decades while meeting climate and biodiversity commitments.

## CONCLUSION

The ABCB's MMC consultation marks a transformative juncture for Australia's built environment. It is not merely a technical reform—it is a strategic opportunity to embed climate resilience, equity, and circular economy principles into the very fabric of our construction sector. By aligning with science-backed frameworks and the leadership of bodies such as the Australian Institute of Architects, GBCA, ASBEC, and First Nations advisory groups, the Scheme can catalyse a new era of design-led, Nature Positive infrastructure.

To realise this vision, the Scheme must go beyond voluntary certification. It must embed architectural leadership, harmonise regulatory definitions, and mandate traceability that reflects upfront carbon, cultural responsiveness, and nature-positive design. These elements are not optional—they are essential to restoring public trust, accelerating innovation, and meeting Australia's climate and housing targets.

The Institute urges the ABCB to seize this moment: to elevate MMC from a niche innovation to a national standard. With bold policy, interdisciplinary collaboration, and inclusive design, MMC can become the cornerstone of a resilient, equitable, and regenerative future for all Australians.

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[i] Building 4.0 CRC's *When Prefab Hits the Ground* (2021)
[ii] Ellen McArthur Foundation (2025) Adaptive strategy for circular design | Ellen MacArthur Foundation
[iii] DasStudio/Dino Vrynios and Prefab AUS/Nick Strongman (2025) MMC Overview – Ministerial briefing document for South Australian Government
[iv] RICS (2023) Targeting tougher U-values under new Part L | Journals | RICS
[v] Building 4.0 CRC's *When Prefab Hits the Ground* (2021)
[vi] Ibid
[vii] Ibid
[viii] Ibid
[ix] Ibid