



# Modular Construction in Australia

The current landscape and the road ahead

Off-site prefabrication enables modules to be pre-built with higher levels of construction accuracy and detailing, resulting in improved thermal performance, acoustic separation and long-term durability.

## INTRODUCTION

Despite its proven advantages internationally, modular construction has not yet gained widespread traction in Australia. At present, it accounts for only a small share of the market, reflecting both industry conservatism and structural barriers to adoption. However, market conditions are shifting. Government investment, combined with growing recognition of modular's potential to address pressing housing and infrastructure needs, is beginning to reposition prefabricated systems as a viable and necessary complement to traditional building methods.

The pressures driving this change are substantial. Housing affordability continues to decline in major urban centres, infrastructure demand is intensifying and labour shortages are constraining project delivery. At the same time, upfront carbon reduction targets require approaches that reduce material waste, streamline construction and improve operational performance. Within this environment, modular and prefabricated systems present clear advantages in terms of speed, safety and resource efficiency.

This paper examines the current landscape and future directions of modular construction in Australia, with a particular focus on its role in addressing the housing crisis. It explores the benefits modular systems can deliver, the barriers that have limited wider adoption and the evolving conditions that are now supporting greater uptake of modular solutions.



Photo credit: Modscape + Modbotics.

## CURRENT STATE OF MODULAR CONSTRUCTION

Prefabricated and modular construction in Australia remains at an early stage of market penetration, representing around 5 percent of the nation's AUD 150 billion construction industry.<sup>1</sup> Industry forecasts point to strong growth, with prefabAU, the country's peak industry organisation for prefabrication and offsite construction, targeting 30% prefabricated construction by 2033.<sup>2</sup> This trajectory reflects international trends, where off-site methods have demonstrated reductions in delivery times, higher quality control and measurable environmental benefits.

Local policy and investment trends reflect a shifting mindset. The federal government has committed \$54 million to modular housing initiatives,<sup>3</sup> while state governments are piloting programs and certification pathways to encourage adoption. Industry organisations, led by prefabAUS, continue to promote capability development and standards to build sector confidence.

Significantly, major institutions are beginning to participate, with the Commonwealth Bank of Australia (CBA) recently becoming the first financial institution to join prefabAUS.<sup>4</sup> CBA has committed to sponsoring a standard-form contract for modern methods of construction, addressing the absence of equivalent frameworks for off-site housing. By providing the same financial certainty long established in on-site construction, this initiative aims to remove a key barrier for buyers and builders and improve market accessibility.

However, significant challenges remain. Experts highlight persistent barriers:<sup>5</sup> high upfront costs, lack of standardised design guidance, limited skilled labour and perceptions of reduced design flexibility continue to constrain uptake. Transport constraints and site access risks further complicate deployment. Addressing these limitations will be critical if modular construction is to fulfil its potential role in tackling Australia's housing shortage.

## BENEFITS OF MODULAR CONSTRUCTION

For architects, it is important to revisit the advantages that modular construction brings to contemporary practice. Modular construction offers quantifiable benefits in delivery speed, cost predictability, design flexibility and safety outcomes. These attributes are central to specification decisions and can influence both project feasibility and long-term performance.

Project delivery is one of the most widely recognised benefits. Global consulting firm McKinsey reports that modular construction techniques could allow home builders to accelerate project timelines by up to 50 percent and reduce costs by up to 20 percent.<sup>6</sup> Factory-controlled environments minimise weather delays and improve consistency, while on-site assembly of modules is faster and less labour-intensive than traditional construction. Shorter construction programs lower financing costs and bring forward revenue generation, creating clear financial advantages for clients and investors.

The advantages extend further across cost, flexibility and workforce safety. Bulk purchasing, precision manufacturing and reduced rework result in predictable budgets with fewer overruns. Modules can be customised, expanded or reconfigured for housing, education, healthcare, transport and commercial projects, demonstrating adaptability across sectors. In addition, lightweight modular systems reduce overall building loads, which can significantly lower foundation

costs for sites that would otherwise require costly groundworks.

A recent article in Smart Infrastructure and Construction highlighted three real-life, modular construction examples that demonstrate how the method shortens construction time, facilitates collaboration between stakeholders, saves labour and costs, and reduces waste:<sup>7</sup>

- **Leishenshan Hospital, Wuhan (China):** Delivered in 12 days, this 79,900 m<sup>2</sup> hospital used prefabricated steel container units with pre-installed services, coordinated through BIM for rapid assembly. Modular zoning supported strict infection control, showing how prefabrication can achieve complex healthcare delivery under extreme timeframes.
- **Media Residence Hotel, Pyeong-Chang (South Korea):** A 10,305 m<sup>2</sup>, four-storey modular hotel was built in 184 days (including 4 months of factory production) to house Olympic media staff, then disassembled and reused as student housing. Factory-built modules with bolted connections, recyclable materials and post-tensioned joints ensured speed, durability and adaptability.
- **Global Academy, Hayes (UK):** This 8,700 m<sup>2</sup> technical college combined 112 prefabricated classroom modules with steel-framed specialist spaces. The hybrid system halved construction time, overcame site constraints and delivered high-quality, acoustically sensitive teaching facilities.

## BUT IS IT SUSTAINABLE?

Sustainability remains one of the strongest arguments for modular construction. Studies consistently highlight how modular construction techniques, including off-site fabrication and assembly and eco-friendly materials, can minimise carbon emissions throughout the building lifecycle.<sup>8</sup> Modular approaches also align with green building outcomes by integrating efficient envelope designs, renewable energy systems and water-saving technologies from the outset.

The modular social housing project in Horsham, Victoria, demonstrates these principles in practice. Delivered by ARKit in partnership with Haven Home Safe, Homes Victoria and Sensum, the \$10.1 million development provided 25 new dwellings using prefabricated modules manufactured under factory conditions. All homes achieved 7-star NatHERS ratings, supported by timber framing methodology that reduced embodied carbon by an estimated 475 tonnes CO<sub>2</sub>e (three to five times lower than steel alternatives). Durable, recyclable materials

such as Spandek cladding and Colorbond roofing were used to minimise replacement. In addition, circular design strategies were embedded, with homes produced in one or two modules to allow future relocation or disassembly.

Ninety-seven percent of construction waste was recycled, significantly reducing landfill impacts. The homes also incorporated all-electric appliances, heat-pump hot water systems and rainwater harvesting to minimise operational energy and water use. As noted by Trudi Ray, Haven Home Safe CEO:<sup>9</sup> “The speed of construction is much quicker than traditional construction methods, as well as having a lower carbon footprint and being able to reduce the amount of construction waste.”

Beyond environmental metrics, the project also delivered community outcomes through placemaking, renter engagement and regional investment, illustrating how modular housing can address affordability while meeting high sustainability benchmarks.

## THE QUESTION ABOUT QUALITY

A persistent barrier to the wider adoption of modular construction is the perception that it produces temporary or lower-quality buildings. In practice, factory-controlled production offers a level of precision and consistency that often exceeds traditional site-based construction. Australian companies such as ARKit, Hickory, Prebuilt and Modscape + Modbotics operate in enclosed, weather-protected environments where insulation, seals and finishes can be installed under tightly monitored conditions. This approach eliminates many of the defects associated with on-site work, where dust, rain and temperature variability compromise outcomes.

Advances in manufacturing technology are further strengthening quality assurance. CNC machining, robotics and automated cutting systems deliver millimetre-level accuracy, reducing human error and enabling repeatable outcomes. Modules undergo multiple inspections before leaving the factory floor, supported by ISO-certified quality assurance systems, and must comply with the same National Construction Code (NCC) and Australian Standards as site-built projects. These include structural requirements (AS/NZS 1170), bushfire resilience (AS 3959), and fire testing (AS 1530.4).

Off-site prefabrication enables modules to be pre-built with higher levels of construction accuracy and detailing, resulting in improved thermal performance, acoustic separation and long-term durability. Continuous

insulation and precise sealing improve airtightness, supporting passive design principles, while precision assembly delivers strong acoustic separation for sensitive applications such as schools, healthcare and multi-residential developments.

An example of this is **Monash University's Gillies Hall**,<sup>10</sup> a 150-bed student residence that achieved Passive House certification. The building employs cross-laminated timber (CLT) panels with high-performance glazing, continuous insulation, carefully detailed thermal bridge control and an airtight envelope. Delivered in around 20 months, it is at least three times more energy-efficient than earlier halls, operates fossil fuel-free and contributes to Monash University's net-zero emissions strategy. Gillies Hall demonstrates that prefabricated timber construction can exceed conventional performance and sustainability benchmarks.

Modular construction is not only efficient but also capable of delivering durable, high-performance buildings. Durability is enhanced through rigorous quality assurance and testing of protective coatings, membranes and cladding, ensuring resilience across Australia's diverse climates, from cyclone-rated regions in North Queensland to bushfire-prone areas. In recent news, Townsville-based modular builder DC Constructions NQ announced it was scaling up production of cyclone-rated modular homes.<sup>11</sup>

Photo credit: Modscape + Modbotics.



## THE FUTURE OF MODULAR CONSTRUCTION AND THE HOUSING CRISIS

Australia's housing shortage has intensified the need for construction methods that are faster, more scalable and more sustainable than traditional approaches. Modular construction is increasingly positioned as a critical part of the solution. As we have discussed, factory-controlled prefabrication not only accelerates delivery but also improves quality, reduces waste and lowers embodied carbon. These qualities are helping shift perceptions away from outdated associations with temporary “demountables,” establishing modular as a durable, high-performing option for permanent housing.

Pilot and large-scale projects are already demonstrating this potential. In South Australia, BoxMod is importing modular units from China to deliver 120 affordable homes for regional and metropolitan needs. The homes will be constructed over a four-year period as part of a pilot aimed at streamlining housing delivery while strengthening local manufacturing capacity.<sup>12</sup>

Government funding and industry collaboration are driving modular adoption at scale. State-backed initiatives such as Victoria's Big Housing Build and Queensland's Housing Investment Fund are creating the conditions for growth, while partnerships between community housing providers, financiers and modular specialists such as Modscape + Modbotics are proving effective in translating policy ambition into built outcomes.

Looking ahead, the sector is set to evolve rapidly through technological innovation and digital integration. AI-driven modular production promises to deliver homes even faster at significantly lower cost. Automation and robotics are improving precision and reducing reliance on scarce trades, while 3D printing is expanding the form and material possibilities of modular systems beyond simple “boxy” forms. These innovations open new opportunities to integrate smart home technologies, renewable energy and sustainable materials into modular projects from the outset.

Global consulting firm McKinsey reports that modular construction techniques could allow home builders to accelerate project timelines by up to 50 percent and reduce costs by up to 20 percent.

---

## HOW ETEX SUPPORTS MODULAR CONSTRUCTION

**Siniat** is part of Etex, a global innovator in lightweight construction solutions. Siniat provides tested systems for fire resistance, acoustics, thermal efficiency, seismic requirements and sustainability across residential and commercial projects in Australia. The company has invested heavily in reducing embodied carbon and provides the Opt2Act program - a carbon-neutral offer on a wide range of plasterboard and metal products. A wide range of Siniat's plasterboard products has also been certified to GreenRate Level A under the Global GreenTag's certification scheme.

Siniat's wall and ceiling systems are well suited to modular construction, offering lightweight solutions that integrate easily in factory-built assemblies. Their plasterboard products and acoustic linings enable rapid installation while meeting building code requirements for fire, acoustic and structural performance. With a strong focus on sustainability, reduced embodied carbon and recycling programs, Siniat complements the efficiency and environmental benefits of modular systems, positioning itself as a key supplier in Australia's growing prefabrication sector.

Fellow Etex brands in Australia and New Zealand that can contribute to modular solutions are **Equitone** for Architectural fibre cement facade materials; **Innova** for Fibre cement solutions in facades, linings and flooring substrates; and **Promat** for passive fire protection.

---

## REFERENCES

- 1 Zhang, Zhiming, Yongtao Tan, Long Shi, Lei Hou and Guomin Zhang. "Current State of Using Prefabricated Construction in Australia." *Buildings*, Vol. 12, No. 9 (2022): 1355.
- 2 prefabAUS. "Building the Future in Three Hours." prefabAUS. <https://www.prefabaus.org.au/news-events/building-the-future-in-three-hours> (accessed 23 September 2025).
- 3 Martin, Mina. "Federal government injects \$54m into prefab housing." *Broker News*. <https://www.brokernews.com.au/news/breaking-news/federal-government-injects-54m-into-prefab-housing-286830.aspx> (accessed 23 September 2025).
- 4 Commonwealth Bank of Australia. "CBA backs prefabricated construction industry to boost housing supply." CBA. <https://www.commbank.com.au> (accessed 23 September 2025).
- 5 Above n 1.
- 6 Blanco, Jose Luis, Dave Dauphinais, Garo Hovnanian and Rob Palter. "Making modular construction fit." *McKinsey*. <http://mckinsey.com/capabilities/operations/our-insights/making-modular-construction-fit> (accessed 23 September 2025).
- 7 Chen, Chuwei. "Advantages and Barriers of Modular Construction Method in Constructing Buildings." *Proceedings of the Institution of Civil Engineers – Smart Infrastructure and Construction*, Vol. 176, No. 2 (2023): 75–84.
- 8 Sullcapuma Morales, Matteo Antonio. "Modular Construction: A Sustainable Solution for Carbon Emission Reduction in the Construction Industry." *International Journal of Engineering Applied Sciences and Technology*, Vol. 8, No. 1 (2023): 393–401.
- 9 Council Alliance for a Sustainable Built Environment. "Case Study Modular social housing in Horsham." CASBE. <https://www.casbe.org.au/casestudies/modular-social-housing-in-horsham> (accessed 23 September 2025).
- 10 Monash University. "Sustainable residential complex opens at Peninsula as growth plans take shape." Monash University. <https://www.monash.edu> (accessed 23 September 2025).
- 11 Nationwide News Pty Ltd. "NQ business to tackle housing shortable with transportable homes." *Townsville Bulletin*. <https://www.townsvillebulletin.com.au> (accessed 23 September 2025).
- 12 38 South Media. "South Australian government announces tender for 120 prefab homes." *Built Offsite*. <https://builtoffsite.com.au/news/south-australian-government-announces-tender-for-120-prefab-homes>