

Ramping up to build more homes

Henley townhouses in Berwick VIC front view.



Creating a pathway for Off-site Timber Construction

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Off-site construction has become a dominant topic over the past decade, with the focus shifting from its real meaning to an understanding of its benefits, necessity, and now to “how we can make it work?”.

This method of construction has been identified as a pre-requisite for meeting the global demand for housing and in an Australian context, it’s crucial for fulfilling the targeted construction of 240,000 homes annually. We are now required to build more homes per year than we have ever done before and meeting this demand hinges on embracing off-site construction more widely and ramping up the capacity of prefabrication.

In our recent piece titled “Living the Dream,” my colleague George delved into breaking down barriers to off-site construction, offering insights into achieving design repeatability and simplicity. In this article, I aim to further the discussion by examining the challenges faced by this method of construction and proposing ways to enhance industry acceptance and strengthen the supply chain.

CHALLENGES

There are many challenges and misconceptions that off-site construction is currently faced with, which are impeding its much-needed growth. These include, on the one hand, unfavourable regulatory systems, cautious lending authorities and insurance providers, and on the other hand, uncertainty of future work and a lack of awareness that the role off-site construction can play in dealing with labour scarcity, material shortage and build speed. There is also an apparent misconception in Australia that prefabricated buildings are somewhat

inferior in quality and appearance to those built on site.

In general, most of Australia enjoys mild weather conditions which has traditionally allowed construction to proceed smoothly year-round, minimizing weather-related interruptions. As such, there hasn’t been as much urgency to adopt off-site construction methods to mitigate weather-related delays. However, with climate conditions becoming less predictable, this mindset is gradually shifting.

Let’s probe deeper into these challenges.

REGULATORY SYSTEMS

Australia’s building codes and regulatory systems are formulated around conventional construction methods or practices. However, this approach poses challenges in accepting off-site construction methods, with the existing frameworks often leading to time-consuming and costly approval processes, riddled with inconsistencies.

For example, deviating from the “deemed-to-satisfy” provisions in the NCC requires a performance solution for each change within a specific project. As this requirement applies even if the change is the same from project to project, it makes adaptations specific to off-site more costly and difficult to justify on some projects. It must be stated that this issue is more prevalent in multi-storey multi-residential buildings than in a row of townhouses, where fire and acoustic requirements are of greater importance.

In light of these challenges, it was pleasing to note that Building Ministers from all jurisdictions recently convened and pledged to collaborate in streamlining regulations to facilitate the expansion of Australia’s modular

and off-site construction industry.

The government’s acknowledgment should pave the way for the Australian Building Codes Board to collaborate closely with industry bodies and jurisdictions to alleviate barriers to adopting off-site construction. Consequently, the upcoming edition of the National Construction Code (NCC) is anticipated to include reforms related to off-site construction. A draft version of the NCC is slated for release on May 1, 2024, inviting public comment and feedback until July 1, 2024.

On a further note, the NSW government released a position paper in November last year, through the initiation of HIA, on the topic of “Proposed regulation of prefabricated building work”. One of the aims of this proposal is to develop a manufacturer certification scheme to suit the specific needs of prefabrication and thereby give confidence for building surveyors and certifiers to approve the finished product.

FINANCING AND INSURANCE

Besides the challenges posed by building regulations, another significant hurdle confronting off-site construction today is the absence of a clear distinction between traditional methods and prefabricated/modular construction when it comes to securing funding.

In traditional house builds, financing typically follows a phased approach, releasing funds as construction milestones are achieved, such as pouring concrete slabs, erecting frames, and completing the entire structure. In contrast, off-site construction reduces the on-site work to a simple installation process, eliminating gradual progression. This necessitates upfront funding for manufacturers or builders.

Because most construction work takes place in factories, lending institutions are

often hesitant to finance such projects since it complicates repossession procedures in case of bankruptcy. Unlike on-site construction, where another builder can take over, factory-based construction presents hurdles.

Security and insurance are crucial to address this issue, yet insuring building works in a factory setting is costly. Without adequate insurance, buyers and financiers lack protection, often rendering the project unviable from the outset.

As off-site construction and modular housing in Australia is expected to grow rapidly over the next 10 years, it is highly likely that the major banks and insurance providers will develop products that address the above concerns to support off-site construction. As an example, NAB has recently indicated it will be working through the process on making financing easier for modular buildings.

BUSINESS MINDSET

The current building industry has been relying heavily on labour-intensive on-site processes that are associated with low margins and low throughput. Also, traditionally the contractor is removed from the design phase and is expected to build what’s been designed.

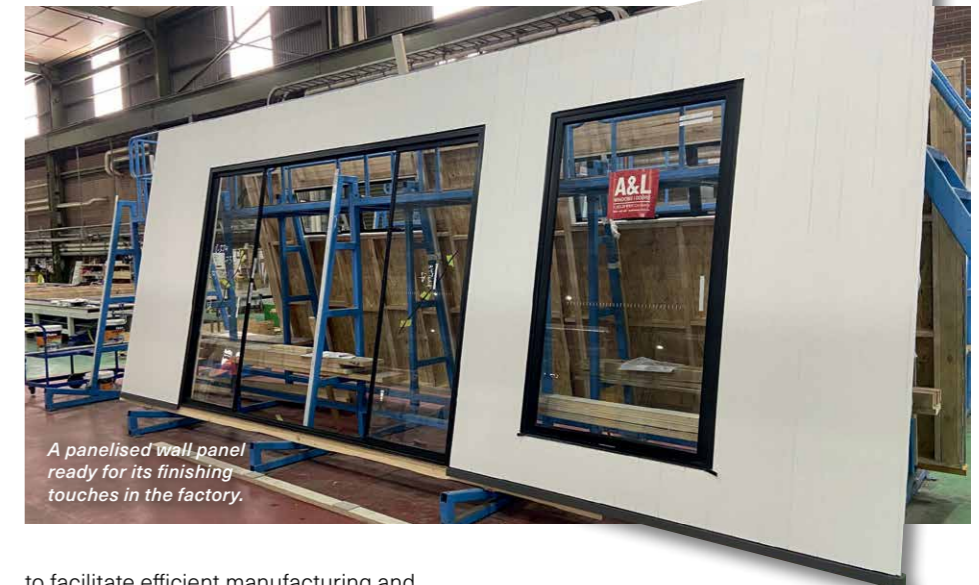
In contrast, off-site construction relies on a more automated, capital-intensive model, based in factories, and requiring continuous throughput and early involvement of the contractor. There is a need for a substantial investment in new technology, facilities and equipment for adopting off-site construction.

The challenge for potential off-site manufacturers is to embrace this shift in the business mindset, particularly given the difficulty in securing financing and insurance as we discussed above. How can we facilitate this investment?

For starters, ensuring a degree of certainty of future work and reducing barriers to adoption are crucial. Recent governmental efforts should contribute positively in this regard. It’s important to acknowledge that the success of off-site construction depends not solely on manufacturers but also on developers, clients, builders, and design consultants. Effective collaboration among all stakeholders from the outset of the project is essential. This ensures that critical design concepts are established early on



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A panelised wall panel ready for its finishing touches in the factory.

to facilitate efficient manufacturing and assembly in a factory setting.

This does not have to be done in one great leap. Gradual moves into prefabrication are already happening, with builders using floor and roof cassettes in conjunction with their wall frames. The next step may be to line the walls rather than create a fully sealed wall. Each builder (and manufacturer) will have a different appetite as to how far to go in each step. The shrewd business will be able to find customers that align with their aspirations.

SUCCESSFUL PROJECTS

One approach to build confidence is to raise awareness through showcasing timber building projects that have been successfully completed using off-site construction methods. By highlighting real-world examples of how off-site construction has been effectively utilized to deliver projects on time, within budget, and with high quality, you can help to dispel misconceptions and demonstrate the tangible benefits of this approach. In addition to raising awareness and understanding among industry professionals, it also helps to educate the



Installation of a fully completed front end module.

general public about the potential of off-site construction.

The prefabricated timber townhouse projects completed in Victoria by Timber Building Systems (TBS), in partnership with Henley, is a prime example of a success story. They have completed over 30 town homes already and an assured pipeline of work means they will be building two a week for the next 15 months.

This partnership has given TBS the reassurance of future work, which meant they can focus on investing on people and processes, to continuously improve their product. On the other hand, Henley has benefited through significant time savings and improved quality. There are a few other companies across Australia who have achieved similar success.

By continuing to showcase success stories in this space, similar to TBS, we can help address any scepticism or resistance and pave the way for greater acceptance and implementation of off-site construction practices in future projects.

Building a home on site is akin to a bespoke construction, even though the model may be repeated. The industrial revolution has shown us that the speed and efficiency resulting from factory construction greatly increases the number of units that can be made. Housing needs to migrate to a more factory-based product, and with the issues above being worked on we should see changes in the near future. Watch this space closely as if you turn away for too long there may be a pre-fabricated home there when you look back. **T**



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