



Plantation Pine Framing: Today's Solution for Mid-Rise Design

Featuring the 2016
National Construction
Code Changes

TIMBER LINK
AUSTRALIA

Plantation Pine Framing: Today's Solution for Mid-Rise Design

Everyone seems to be getting excited about the National Construction Code changes occurring in May that will make it easier for timber to be used in mid-rise construction. Ric Sinclair, Managing Director of FWPA recently described the change as the biggest change to happen in the timber industry for over 30 years.

And it is exciting. Australian architects and designers are now able to create environmentally sensitive mid-rise timber buildings without the costs and bureaucratic headaches previously involved with building tall with timber. However the majority of the attention and excitement seems to be around new heavy mass timber, CLT and EWP solutions.

Yet we have an existing, tried and tested product, Australia's housing workhorse, solid plantation pine framing. Pine framing is Australia's quiet achiever. It has a small environmental footprint, is design flexible and does the job it needs to. It is a perfect fit for mid-rise design.

Pine framing has a very small carbon footprint.

Wood offers the builder or designer several environmental advantages over common, alternative building materials:

- It's a renewable resource
- It's a carbon store, removing carbon dioxide from the atmosphere and locking it up
- It's manufacture requires less energy
- Any manufacturing waste is used as fuel or in other industries e.g. mulch

Studies have found that building a modest four-storey building from timber would cut carbon emissions to a degree similar to taking 500 cars off the road for a year. The architecture firm responsible for the world's tallest



The Green, Parkville, Victoria
Credit: Frasers Property Australia

building, have claimed a 125m-high timber skyscraper is not only technically feasible but also economically competitive and could reduce a skyscraper's carbon footprint by up to 75% compared to one traditionally built.

Pine framing is versatile, providing the flexibility needed to create good design. It is available in a wide range of sizes and grades and is readily available across Australia. While the sizing requirements for mid-rise may vary from traditional detached construction, with consultation this can be easily accommodated.

Pine framing is the preferred material and construction method for builders. They have years of experience building with it. It's quick to use and an enjoyable product to use with off-site prefabrication saving time and

wastage on site. This is why lightweight timber is the backbone of over 90% of Australia's detached houses.

Pine framing is lightweight saving time and money, particularly when compared to the weight of CLTs and EWPs not to mention concrete and steel. Using lighter materials cuts transport costs, crane costs, scaffolding costs and foundation costs. This also makes pine framing a good option for remote locations or sites with difficult access.



The Green, Parkville, Victoria
Credit: Frasers Property Australia

Why is everyone excited about the mid-rise code-change?

The increasing urbanisation of Australia's population means more and more Australians are choosing to live in medium density houses and apartments. Mid-rise timber buildings will also be an option for the commercial building sector and we aren't just talking about building new mid-rise offices and hotel/motels. Lightweight timber structures can be used to grow existing steel and concrete buildings, adding on extra storeys. An exciting option for areas where green space is limited or non-existent.

The code change also opens the market up to medium sized builders and developers as lower cost timber buildings will create viable suburban mid-rise development projects. Timber mid-rise construction is estimated to be around 15% cheaper due to the speed of construction. A recent cost comparison study by the Timber Development Association for an aged care facility in the outer suburbs of Sydney found building in timber was 14% better value than steel. The big boys in town like Lendlease are already leading the way developing their own timber engineering solutions, which suggests they see a significant financial opportunity here.

What is the size of the mid-rise opportunity?

The majority of multi-residential construction in Australia isn't high rise. Across Australia, it is estimated that around 51% of new dwellings in class two buildings are in buildings of eight or fewer storeys (Source: Class Two Buildings & Multi-Storey Construction, ACI, January 2016).

While technically there is no specific limit to the height of lightweight construction, research indicates that mid-rise buildings in the 2-4 storey category are ideal for lightweight pine framing and even 5-6 storeys could be cost effective. Buildings of 7-storeys and above are more suitable to mass timber solutions, due to the larger joist depths these require. Of the 1 to 8 storey residential construction in Australia, almost 60% is 4 storey and below.

Over the next three years we estimate that some 60,000 high density dwellings of 4 storeys or less will be constructed in Australia. If pine framing is used for the pre-fab wall frames (excludes any roofing timbers) in 15% of these buildings, that's almost an extra 27,000m³ of pine framing that could be sold. A 15% share of the

building activity in this multi-residential sector would look something like:

- 2,100 Melbourne apartment buildings in lightweight timber
- 2,040 Sydney apartment buildings in lightweight timber
- 645 Brisbane/Gold Coast apartment buildings in lightweight timber
- 780 Perth apartment buildings in timber
- 5,565 apartment buildings nationally in lightweight timber

Plus, the 8-storey commercial extension opportunity could be one-third of that again.

In our opinion, the 15% timber share used here is extremely conservative. Given the compelling case to builders and developers regarding construction time and material savings, we would expect timber's share to grow over time to over 50%. A similar construction code change in Canada resulted in an astounding 80% conversion to timber after only two years.

What is Timberlink doing to support the change?

We are currently working on two fronts. On one we will co-fund with FWPA and other industry stakeholders a field technical team for the coming three years in Victoria to call into architecture firms to discuss and assist with designing timber framed mid-rise buildings.

On the other front we are collaborating with the industry to understand the sizes, volumes and service offers required for this new market. We want to continue supplying Australian plantation pine to support Australian detached homes as well as growing demand in medium density apartments.

Timberlink framing is the building product for today and tomorrow.

National Construction Code Changes

From 1 May, changes to the National Construction Code (NCC) will allow timber framing to be used in buildings up to 25 metres high in Class 2 (apartments), Class 3 (hotels) and Class 5 (offices). This change will bring Australia more in line with building codes used in New Zealand, North America and Europe.

The new code creates a voluntary deemed-to-satisfy solution and is based on incorporating fire-resistant plasterboard, sprinklers and other detailing requirements into designs. Timber framing can then be used to construct buildings up to 25m high (approximately eight storeys) across the following building classes:

- Multi-residential (class 2)
- Hotels and motels (class 3)
- Office buildings (class 5)

Currently, timber building systems are restricted to 3 storeys or 4 storeys over a concrete/masonry ground floor. Buildings higher than this can be constructed (e.g. Melbourne's 10-storey Forte building) but are required to be assessed under an 'alternative solution' approach. Costly and time consuming has resulted in the easier options of concrete and steel being used.

The benefits of taller timber buildings not only include lower costs, but also increased opportunities for innovative design and construction, faster build times leading to reduced truck movements and local disruption as well as improved environmental outcomes and increased volumes for the timber industry.

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2016 National Construction Code Change

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NCC changes allow wood construction to 25m - Class 2, 3 and 5 buildings

Explanations and opinions from design and construction industry participants

Wood encouragement policies gaining traction in Australia

Australia joins world leaders in allowing tall timber construction



Can timber learn from Nokia's mistakes?



In 2007 Nokia had a 50% share of the world's smartphone market. Five years later they had less than 3%. When announcing their acquisition by Microsoft in 2013, Nokia's CEO reflected "we didn't do anything wrong, but somehow, we lost".

Journalist Ziyad Jawabra claims it was Nokia's refusal to change and learn new things that led to their downfall. "The advantage you have yesterday, will be replaced by the trends of tomorrow. You don't have to do anything wrong, as long as your competitors catch the wave and do it RIGHT, you can lose out and fail."

Parallels can be drawn between the enormous changes the smartphone industry went through and what is about to happen to Australia's housing industry. Australia's population is forecast to grow by 36.5% over the next 20 years. Clearly detached housing alone is not the solution for this kind of population growth particularly as 75% of this growth is projected to occur in our capital cities.

As Jawabra observed "To change and improve yourself is giving yourself a second chance. To be forced by others to change, is like being discarded. Those who refuse to learn & improve, will definitely one day become redundant & not relevant to the industry. They will learn the lesson in a hard & expensive way."

We need to develop timber designs for this new mid-rise segment otherwise we may find other specifiers "catch the wave" and you will be left with a dwindling customer base wondering why you lost when you did nothing wrong.

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Why building with plantation pine is good for the environment:

It is renewable and fast growing.

It is a natural carbon storage bank keeping carbon out of our atmosphere.

It has a lower embodied energy than many other building materials such as concrete, steel or plastics.

It can be recycled at the end of its service life.



Timberlink Australia
Telephone 1800 088 135
www.timberlinkaustralia.com.au

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