



## Building Benefits — Cost, Time and Safety

There are multiple benefits to using timber building products in construction, mostly derived from the natural strength and light weight properties of wood. These attributes translate to benefits during construction in cost, time and safety.

### Cost, Time and Safety Benefits

Timber is a light and strong building material. A Cross Laminated Timber (CLT) panel has the same strength as a reinforced concrete panel of the same size and is only 20 percent of the weight. This lighter weight gives timber many advantages in cost, time and safety, as timber can be easily be built off-site, or prefabricated. The low weight of timber means that larger pieces can be constructed and transported to site easily. Prefabrication occurs in a controlled environment, allowing for the assembly of pieces with higher accuracy than what is achieved on-site, resulting in a tighter fitting construction (Wood Solutions, 2013).

A small team can quickly and safely construct a prefabricated CLT building. The off-site manufacturing of prefabricated products provides a safer and faster build. **Installing and securing prefabricated pieces takes less people and is very quick, greatly reducing construction time and exposure** to weather events and other setbacks. Builders view this favourably, as it returns noticeable cost savings to the project.

The use of prefabricated timber also removes many processes carried out on a traditional construction site, such as grinding, welding and concrete pouring. This removes the need for as many on-site personnel and increases safety, through less dangerous processes and less people exposed to the site. Its light weight also saves costs and increases safety because there is less heavy craning and need for scaffolding and associated personnel.

Prefabricated timber also reduces the amount of waste produced on-site as it arrives on-site ready for installation, creating less environmental impact and reducing pollution to the neighbourhood. The lack of processes involving heavy machinery, grinding and

### Quick Facts

1. Timber building products are lightweight and strong; these properties make them suitable for prefabrication, transport and easier installation.
2. Wood is very strong structurally. A comparison with steel and concrete shows that plantation pine structural timber, for example, has a strength for weight ratio 20 percent higher than structural steel and four to five times better than non-reinforced concrete in compression.
3. Building with timber products can result in faster construction time and fewer on-site workers. For example, a crew of only four constructed Stadthaus apartments in London, a nine storey Cross Laminated Timber (CLT) building.
4. Prefabricated timber construction is quieter and faster than traditional construction methods, causing less disruption to the surrounding neighbourhood, as well as reduced risk of accidents onsite as more of the manufacturing happens in a controlled factory environment.
5. Simple hand tools can easily modify timber building products. This benefit makes the use of timber forgiving to design and construction errors.

sawing also reduce noise and disruption in the neighbourhood.



Figure 1 The Inveresk Apartments at University of Tasmania install prefabricated modular apartments. Image courtesy of University of Tasmania.

### Further Reading

Devine, G., 2017. *The Gardens Macarthur Tops Out*. [Online] Available at: [www.blog.strongbuild.com.au/gardens-macarthur-tops](http://www.blog.strongbuild.com.au/gardens-macarthur-tops)

Lloyd, M., 2017. *All-timber apartments assembled like flat-packed furniture*. [Online] Available at: [www.abc.net.au/news/2017-02-25/all-timber-apartments-assembled-like-flat-packed-furniture/8301308](http://www.abc.net.au/news/2017-02-25/all-timber-apartments-assembled-like-flat-packed-furniture/8301308)

University of Tasmania, 2015. *Inveresk apartments: what a difference a day makes*. [Online] Available at: [blogs.utas.edu.au/csd/2015/09/01/inveresk-apartments-what-a-difference-a-day-makes/](http://blogs.utas.edu.au/csd/2015/09/01/inveresk-apartments-what-a-difference-a-day-makes/)

Wood Solutions, 2013. *Manufacturing efficiency and flexibility*. [Online] Available at: [www.woodsolutions.com.au/Articles/Manufacturing-efficiency-and-flexibility](http://www.woodsolutions.com.au/Articles/Manufacturing-efficiency-and-flexibility)



### Case Study - The Green Parkside, Parkville



Located on the site of the 2006 Commonwealth Games Village, Parkside Parkville - a master planned apartment precinct - is the product of a joint venture between Frasers Property Australia and Citta Property Group.

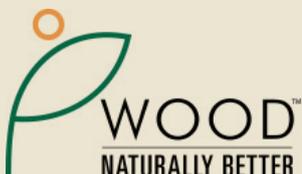
The Green is the first five-storey timber framed residential building in Australia and comprises 57 apartments across 5,100 square metres.

The building utilises a range of prefabricated parts, including wall panels, roof trusses and flooring cassettes, which were “dropped in” by a crane to construct the building in layers. The use of prefabricated internal walls introduced programme efficiencies with walls being installed while the levels above were still being completed. In addition, once the walls were in place, the installation of services was able to follow only 24 hours later.

Efficiencies in these areas provide opportunities for construction cost savings of up to 25% - with time savings being a major contributor. The structure took just 12 weeks to complete, including the roof trusses and floor cassettes.



Top Left: Construction of The Green structure took just 12 weeks  
Above: The Green, Parkside Parkville



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