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## ARkit Prefab and Prefabricated Eco Homes



ARkit's sustainable and innovative kit homes are made almost entirely from timber.

### Overview

<b>Type</b>	<a href="#">Residential</a>
<b>Location</b>	<a href="#">VIC</a>
<b>Architect</b>	Craig Chatman
<b>Engineer</b>	GHD Australia [ESD]
<b>Photographer</b>	Tobias Titz

#### Additional Information

#### Articles

- [Forest management certification](#)

ARkit's architect-designed timber kit homes have been developed as part of a holistic approach to sustainable living. Every step in the process of designing, building and inhabiting the homes has been geared towards reducing the carbon footprint of humanity's basic need for shelter and the more complex requirements of modern life.

Timber is central to a construction system that has been researched and developed over the last six years, resulting in a range of factory assembled or custom-designed homes that are not only beautiful to look at and live in, but are cost-effective and have all the added environmental properties of timber buildings.

Victoria's 2010 State of Design Festival featured a fully assembled, functioning ARkit EcoStudio in the Malthouse Theatre courtyard as an example of sustainable living. The EcoStudio is a 50sqm one-bedroom house with a living area, kitchen and bathroom, and is the building block on which the larger and/or custom-designed homes are based. Craig Chatman, the architect behind ARkit, highlights the versatility of the kit homes, "We can go up to three-bedrooms or double storey; we've looked at student accommodation previously, and we're currently looking at drop-in boxes as house renovations in the inner suburbs."

## Structure

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The frame of the ARkit homes is predominantly constructed from 100% plantation pine structural plywood. Craig Chatman says, "We have minimised the amount of steel in the frame, although it's inevitable, especially for the transportable buildings, that we had to use some. However, some prefab manufacturers utilise steel floor joists throughout, but we use timber floor joists, which is an engineered wood product, and that builds in to the philosophy of what we are doing - straight and true, and minimising the use of steel."

"Over the last six years or so we've expended a lot of energy and effort in research and development to come up with the construction system, which is a modular wall panel system that is multi-compartmental, and includes your external cladding and a few different air pockets and gaps, moving all the way through to the structural plywood. All the panels interlock with each other and we have the windows made up as well, so they lock into the walls."

## Exterior

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For the exterior cladding of the ARkit homes, Craig Chatman has sourced short lengths of Western Red Cedar that are difficult to use for standard buildings, which means he's using timber that would otherwise go to waste. The Western Red Cedar creates an exterior that is warm and inviting, with a distinctive warm tone that fits in to any environment. Craig Chatman notes that, "Like all timber buildings

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### Additional Information

#### **Framing**

Structural [plywood](#) (manufactured from 100% plantation grown [Radiata Pine](#))

Structural Timber Poles

[Laminated Veneer Lumber \(LVL\)](#)

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#### **Articles**

- [Forest management certification](#)
- [Carbon storage](#)

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### Additional Information

#### **Decking**

[Silvertop Ash](#) or [Spotted Gum](#)

there's a bit of upkeep and maintenance required, no matter what you use on the outside, and foremost on those sides of the building that are affected by more sun - the northern side and the western side. You can neglect Western Red Cedar a little bit more, so you can leave it and it goes a beautiful silvery grey colour. But I recommend that it needs a little bit of upkeep to moisturise it, so it should have an occasional coat of oil."

Exterior cladding is always a balance of appearance with durability and longevity. Craig says, "I looked at various timbers for the outside but I found that Western Red Cedar withstands the harsh conditions well; it's very, very stable, it's termite resistant, and it's got good thermal insulation properties."

## Interior

The inside of an ARkit home radiates simplicity and seamlessness, which belies the years of R&D that have been put in to the modular construction system to increase the overall sustainability rating of the homes. As you move through the building the attention to detail and the quality of the finishes stand out, such as the smooth golden glow of the Hoop Pine wall panels, which, in situ, form the perfect foreground to whatever view is outside the double-glazed windows.

One of the main reasons Craig Chatman uses timber as the primary element in the ARkit system is because "timber has a low embodied energy ... the amount of carbon that is released by timber as a building material is 15kg per cubic metre, compared to something like aluminium, which releases 22,000kg of carbon per cubic metre, and timber also absorbs carbon out of the atmosphere during its growth period. And we minimise the amount of aluminium that goes into our buildings - I think the only aluminium is in the shower screen!"

## Specification

### Structural

#### **FRAMING**

Structural [plywood](#) (manufactured from 100% plantation grown [Radiata Pine](#))

STRUCTURAL TIMBER POLES

[Laminated Veneer Lumber \(LVL\)](#)

#### **Windows**

[Western Red Cedar](#)

#### **External Cladding**

[Western Red Cedar](#)

#### **Articles**

- [Low embodied energy](#)

#### Additional Information

##### **Flooring**

[Spotted Gum](#)

##### **Internal Paneling**

[Hoop Pine plywood](#) panels

Doors

[MDF](#) Redicoat doors

EO (low formaldehyde level) [MDF](#)

#### **Articles**

- [Thermal performance](#)

#### Additional Information

##### **Articles**

- [Forest management certification](#)
- [Low embodied energy](#)
- [Thermal performance](#)
- [Carbon storage](#)

## Exterior

- [Acoustic performance](#)

### **DECKING**

[Silvertop Ash](#) or [Spotted Gum](#)

### **WINDOWS**

[Western Red Cedar](#)

### **EXTERNAL CLADDING**

[Western Red Cedar](#)

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## Interior

### **FLOORING**

[Spotted Gum](#)

### **INTERNAL PANELING**

[Hoop Pine plywood](#) panels

#### DOORS

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