

# LEGO-LIKE HOUSE STANDS ITS GROUND

The Rakaia Cube, on show at HIVE, was developed in direct response to the Canterbury earthquakes by Falcon Construction and Allied Concrete.

**D**avid Reid and Mark Tutty, formerly of David Reid Homes, started Falcon Construction to help with the Christchurch rebuild. They partnered with Allied Concrete to develop the Cube, a precast concrete system that is earthquake engineered and specifically designed to withstand an earthquake.

The precast concrete allows movement to be absorbed, while steel reinforcing ensures the structural integrity is not compromised.

Comprising basic structural modules that can be put together and taken apart in a variety of ways, the Cube has been described as being like LEGO blocks.

Its basis is an 8 × 4 m structure made of precast concrete that can connect to other cubes or pods vertically or horizontally. There is virtually no limit to how the pods are used – they can be engineered to construct anything from a single-level residential home to a multi-level commercial building. As with LEGO, the pods can be deconstructed and put back together elsewhere as required.

All of the structural elements of the Rakaia Cube – the concrete floor, concrete walls and internal engineered wall panels – are prefabricated to aid construction speed.

A demonstration of how precast concrete panels can be used as external walls or in conjunction with other cladding, it has a polished Allied Concrete Hyland River floor. ◀



The Rakaia Cube is a precast concrete system that is earthquake engineered.

## SHOW TIME

These and other prefabricated housing options can be seen at the Home Innovation Village (HIVE) in the Canterbury Agricultural Park, open until February 2014.

For more information, see [www.homeinnovation.co.nz](http://www.homeinnovation.co.nz). ◀

# LOCKWOOD ECOSMART

**Lockwood, in collaboration with Dave Strachan of Strachan Group Architects, has developed the EcoSmart series.**

**E**co design features are not entirely new to Lockwood, which has been building solid-wood homes for over 60 years, but this is the first time they were considered from the beginning.

'Prefab is important in improving the efficiency, cost and quality and reducing the waste in the New Zealand building industry,' says Dave Strachan.

The eco features showcased in the Little Wing EcoSmart house will soon be available in other Lockwood designs. The Little Wing house on show at HIVE is 75 m<sup>2</sup> with a 23 m<sup>2</sup> garage, but the modular design allows smaller or larger versions to be easily created.

Passive design features include an overhanging roof that prevents overheating

in summer while allowing the winter sun to penetrate into the building. The highest percentage of glazing is on the north-facing façade of the building, with only a very small percentage of glazing on the south side.

The living and bedroom areas are part of a high-performance thermal envelope that includes double glazing with low-E glass and high values for the walls (R3.0), ceiling (R4.5) and floor (R2.0).

Solar hot water and photovoltaic cells are mounted on the roof at a 30° slope to make the most of the solar benefit. The solar hot water heating is a dual panel with a 300-litre stainless steel storage tank. An eight-panel solar array of photovoltaic cells generates electricity that can

either be stored in batteries or fed back into the national grid. ◀



The Little Wing EcoSmart House incorporated eco-features and technologies into the design from day one.