cool + quirky

story > Annie Reid

This unusual beach house complex is proof that a high level of sustainability in a higher density, multi-residential project can be achieved.

smart essentials

- double glazing
- Ampy 'Ecometers' monitor electricity, gas and water consumption in 'real time'
- filtered and sterilised rainwater
- polished concrete slab floor
- energy-efficient appliances.

This year Victoria experienced its hottest temperatures on record. But you wouldn't have known it if you were inside Third Ecology's Barwon Heads beach houses.

'When it was 45 degrees outside, it didn't get any hotter than 26 degrees downstairs in here,' Third Ecology's Mark Sanders says.

The hot weather provides an even greater impetus to maintain ecologically sustainable architecture, which is precisely what Third Ecology specialises in and what the Barwon Heads project delivers.

The coastal town on the mouth of Victoria's Barwon River is home to many holiday makers, and its architecture is mostly informal, comprising beach shacks made from readily accessible materials.

This project comprises two, two-storey dwellings on a brownfield/infill site, replacing a 1950s fibre cement sheet beach house. It demonstrates that a high level of sustainability can be achieved in a higher density, multi-residential project.

With a FirstRate energy rating of 37 points and 42 points respectively for beach house one and two, the house is miles ahead with its rating in excess of six stars (19). Given that two-storey dwellings struggle to reach five stars, the project provides an even more impressive demonstration of its overall effectiveness.

Its most quirky feature is its striking lop-sided element, designed to create interest from the street level.

'The upper level leans as a tilted façade rather than being horizontal,' Mark says. 'My children wondered whether the floor was slanted – because the roofline and the façade are!'

The unique design is specific to the site, as is the tiny amount of space Third Ecology and their team had to work with – just 520 square metres.

Not only did the two properties need to be built on such a small building site but a further challenge arose in the design phase due to a rear sewer easement not being indicated on authority sewer plans. Support by the City of Greater Geelong saw the project gain approval within four months in July 2007, and construction began in May 2008.

Central to Third Ecology's philosophy is getting the design mix right the first time.

Thus, many of the GreenSmart principles of passive solar design are used throughout this coastal project, which Mark believes is the best way to create sustainable living.

CENTRAL TO THIRD ECOLOGY'S PHILOSOPHY IS GETTING THE DESIGN MIX RIGHT THE FIRST TIME

'It's not about introducing tricky systems, although detailed research was undertaken to ensure all products used have a high level of sustainability,' he says.

The beach houses are oriented to the north and have a north-facing open space. High performance double glazing uses an optimal 12mm air space and low-e coating plus argon gas fill, and the windows are sized and oriented to allow for effective cross-ventilation and reduced glare.

A polished concrete floor slab provides highly effective thermal mass, while the walls and ceilings/roof are insulated to a higher level than standard (R3.2 and R5.2 respectively) to further minimise heat losses and gains.

Water needs have also been fully integrated into each dwelling. Each has a 13,000-litre tank system located underneath the southerly driveway, which collects and stores rainwater. After filtering and UV sterilisation via further interconnected underground concrete tanks, a high performance pump delivers water to all fixtures and taps.

All fixtures, fittings and taps are three- and four-star water efficient, which reduces water demand by more than 50 per cent compared to the average dwelling.

'Based on water demand and consumption, it is predicted that the rainwater system will provide up to 100 per cent of internal water requirements for each dwelling,' Mark says.

The Barwon Heads beach houses recycled 80 per cent of waste during construction, with the assistance of an innovative waste management contractor.

The '3 Bin' municipal system is operating now, while an 'all waste' system was set up during the construction phase with the waste contractor sorting and recycling waste on their premises.

'We used plantation and sustainably harvested timber for structural, joinery (windows and cabinets) and external purposes, and used low energy, low/no toxicity materials by using recycled and remachined materials,' Mark says.

According to Mark, achieving highly sustainable design and construction is possible for about only 10 per cent extra compared to a standard, non-sustainable design.

It's not much to live the high life. gs

ABOVE: Polished concrete floors provide effective thermal mass

ideas
everyone can use

- install the highest rating water efficiency taps you can afford to reduce demand on potable water
- if using timber in your project use recycled or sustainable plantation timber wherever possible
- incoporate an exposed concrete slab to improve thermal mass and keep your home cooler in summer and warmer in winter (in heating climates).

beachy green

Jan Macpherson is very proud of her sustainable beach house. The New Zealand-born lawyer has always been attracted by areas with a 'green feel about them', and found herself being drawn to Barwon Heads from her Melbourne city house.

For her first new build, she wanted a good relationship with the team she chose to work with and, after a thorough search, 'clicked' with Mark Sanders from Third Ecology. The project ran smoothly from the first meeting.

'[Third Ecology] didn't just design but they also project-managed the site as well. It really was the icing on the cake,' Jan says. It meant that everything was done meticulously according to their plan, which was important to Jan as she will soon move permanently to take up residence in the front beach house. At the moment, it is rented to holiday makers when she's not there herself.

'It's just amazing. Just the ambience you feel when you walk in is fantastic, and there's an amazing sense of spaciousness despite it not being a big home.'