SETTING THE STANDARD

ebode's Westmere project aims to set a new standard for sustainable urban house design and construction.

By Niel de Jong, Director of Design, ebode Sustainable Homes

Starting with design, the planning of any urban house is usually heavily dictated by the contour, size and shape of the site. Add in district plan constraints and the requirement for good passive solar design, and it can be difficult to tick all the boxes.

In ticking boxes, ebode has included systems more common to remote locations, such as rainwater collection and (off grid) solar power. Inclusion of these systems in an urban setting challenges the notion that living more sustainably should only be considered if your home is in the middle of nowhere.

Exterior of the Westmere house during construction.

Modular design the starting point

Fortunately, the Westmere house site was long, narrow, flat and reasonably well oriented to the sun, so rather than starting from scratch, a modular ebode design was used. This reduced the overall cost of the home – both from a design perspective and in the ability to repeat familiar details from similar designs.

Some compromise was necessary, with the house facing northeast rather than due north to avoid infringing the height restriction on more than one boundary. The roof design was also altered slightly to ensure deep sun penetration in winter and good shading in summer. This resulted in the dramatic angles that have proved a feature of the home.

Sustainable materials and specialist technologies

All materials in the home were specifically chosen to meet strict sustainably criteria, from the super-insulated concrete slab containing recycled aggregate to the hand-made New Zealand floor tiles and blockwork.

Although vetting all the products and materials used took some extra time, the effort was no more than, say, importing a marble bath from the other side of the world.

During construction, some contractors were surprised to find no skip on site. They later found this advantageous, however, when they were able to reuse 'waste' materials for additional nogging, landscaping fill and other creative applications.

The Westmere house also contains a host of specialist technologies, such as:

- rainwater collection
- a grid-connected photovoltaic power generation system
- a temperature and weather monitoring system that automatically opens and closes windows in response to temperature and predicted weather changes.

ebode Director of Design Niel de Jong with Green Party MP David Clendon pointing out some of the sustainable features of the Westmere home.

Comfort, cost benefits and reduced consumption

As well as additional comfort for the homeowners, there are cost benefits in installing these technologies. Depending on the number of occupants and their habits, the cost of solar hot water is likely to be recouped in 3–5 years. The standard grid-connected photovoltaic power generation system is expected to reduce the monthly power bill by 25–50%. Coupled with water efficient toilets, tapware and appliances, the 22,500 litre rainwater collection system could reduce council water consumption by an impressive 90%.

At present, a family of five lives at the Westmere house. ebode will monitor their power and water consumption and the indoor and outdoor temperatures. This data will be used to support the notion of sustainable urban living for more New Zealanders.