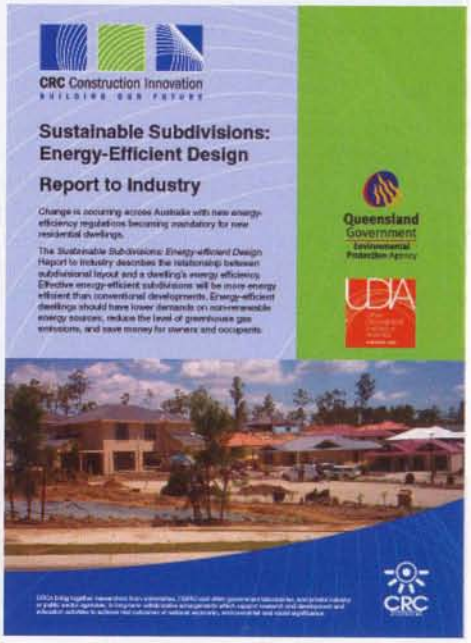
Research

Dr Keith Hampson – Chief Executive Director, CRC CI

Reporting to industry on sustainable subdivisions



The Cooperative Research Centre for Construction Innovation has released its report to industry.

Units are more energy efficient than houses, residential subdivisions would benefit from improved orientation of blocks and homes could be at least 90% more environmentally sustainable, according to new research findings from the Cooperative Research Centre (CRC) for Construction Innovation.

Further, if detached homes adopted better designs they could be more than 200% more energy efficient in terms of energy used for heating and cooling.

The Sustainable Subdivisions: Energy Efficient Design Report to Industry is based on research from the sustainable subdivisions project, which began in 2002 as part of Construction Innovation's sustainable built assets program.

With new energy-efficiency regulations becoming mandatory for new residential dwellings, this timely report examines the relationship between subdivisional layout and a dwelling's energy efficiency required to create comfortable, environmentally responsible places in which to live.

The report focuses on new dwelling construction in South-East Queensland, taking into account the different types of house styles and different heating and cooling energy use that have developed there compared with the more populous and cooler southern states.

Nine detached dwellings were examined – single storey slab on ground, elevated and prefabricated; double storey; and split level – modelled as if in Brookwater, a suburban greenfield development in Brisbane's south-west. It also looked at seven attached dwellings — medium-density, multi-storey residential (2 or 3 level, walk up) and high-density (over 4 storeys) — modelled as if in Kelvin Grove Urban Village, a brownfield development in inner suburban Brisbane.

As well as the major impact good design can have on improving operating energy efficiency for detached dwellings, this CRC report found that:

- More work is needed on general home orientation to improve efficiency and capture summer breezes;
- Altering the orientation of a detached home on a lot reduced energy use by 10–32 % in tests; and
- Good breeze access can affect energy efficiency by 5–15 %.

It also found that attached dwellings:

- Are up to 50 % (and on average 35 %) more efficient than same-sized houses; and
- Achieved 11–32 % improved energy efficiency in orientation tests.

The report shows that external barriers, shielding and ventilation in all housing types

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are important factors in overall comfort levels.

"The CRC for Construction Innovation aims to accelerate the growth of healthy and sustainable constructed assets," Chief Executive Officer Dr Keith Hampson said.

"We need to see more sustainable houses and buildings coming off our production lines. To achieve this, we will work with industry to optimise the environmental impact of built facilities as well as delivering a sound conceptual basis for economic, social and environmental accounting of the built environment.

"The research suggests that subdivision and home designs addressing aspect, shape, topography, slope and density can result in a mix of homes with good orientation for maximum solar access and ventilation."

The report was welcomed by Dr John Cole, Executive Director of the Sustainable Industries Division of the Environmental Protection Agency Queensland. "It focuses on energy issues pertinent to residential development in the South-East Queensland region and is a significant step in the development of a sustainable building sector and more liveable suburbs."

The report also gives relevant information at a time of "heightened community and government concern about energy efficiency, greenhouse gases and sustainable and responsible use of our land and resources," said Urban Development Institute of Australia (UDIA) Queensland President, Peter Sherrie.

He also believes the research shows the need for greater education and support for the development industry to increase its output of sustainable developments.

"Exciting improvements are possible but there are still a number of fundamental obstacles to overcome, including, firstly, educating the consumer to create a greater appreciation of the more sustainable products.

We are becoming increasingly aware that the industry requires a supportive market, along with a supportive planning framework which rewards, rather than inadvertently penalising sustainable developers."

One identified challenge is the lack of an appropriate subdivision design rating tool for South-East Queensland. The CRC report notes that current methodology from southern states only assesses the impact of solar gain/protection. For South-East Queensland, future methodology needs to incorporate ventilation, shielding and zero lot lines.

"We look forward to converting the results of this CRC applied research project into tangible outcomes and working together in leading the transformation of our industry to a new era of enhanced business practices, safety and innovation within the sector," Hampson said.

Anne Miller and Project Leader, Michael Ambrose both of CSIRO were the authors of this report to industry. Construction Innovation industry, government and research partners collaborating on the Sustainable Subdivisions: Energy-Efficient Design project were: Brookwater, DEM, Brisbane City Council, Queensland Department of Public Works, CSIRO and Queensland University of Technology.

Copies of the Sustainable Subdivisions: Energy Efficient Design Report to Industry downloadable from www.construction-inovation.info.