

# CONSTRUCTION 2020

A Vision for Australia's Property and Construction Industry

Executive Summary

## Introducing the 2020 vision

Looking to the future is an important step in any industry. Property and construction is the backbone of the Australian economy providing 14% of the nation's wealth and employing more than 730 000 people.

To increase its contribution to Australia's wellbeing and to capture new opportunities, the industry must respond positively to new and serious challenges.

New challenges require new approaches . . .

Through a national initiative of the Cooperative Research Centre (CRC) for *Construction Innovation*, Australia is taking a significant step forward in establishing a vision for the future of the property and construction industry – this initiative is *Construction 2020*.

Industry leaders and members around the country have been consulted in order to define applied research required for our critical industry culminating in the report, *Construction 2020 – A Vision for Australia's Property and Construction Industry*.

*Construction 2020* documents a framework within which Australia can set a research agenda to position itself to perform more competitively at an international level. Out of this process eight key themes emerged. These visions for the future reflect the major concerns of the industry and the improved future environment in which its stakeholders would like to work.



# Conceiving the 2020 vision

*"My vision is for an industry focussed on real value and sustainability, and able to deliver this economically, efficiently and safely."*

Construction 2020 began with a series of workshops held from November 2003 to February 2004 in every capital city of Australia, seeking the views of hundreds of industry leaders and members. Through a questionnaire and workshop process, respondents considered a timeframe to the year 2020. They identified their visions for the industry future, barriers to implementation and the research required to achieve their vision. They were also asked to define their best dreams and worst nightmares for the industry.

# Delivering the 2020 vision: Australian leadership in research and innovation

*"I envisage a change in the contracting basis for construction to more equitable relationship-based principles."*

The overarching vision for 2020 is for the industry to be taking more responsibility for leading and investing in research and innovation. The industry has clearly identified a closer relationship between researchers and research users as an aspiration for the future.

Australian industry is recognising the need for change in the business environment, environmental sustainability, and information and communication technologies. An active program of R&D, education and technology diffusion will be required to achieve the visions. Improvement to tools, processes and skills will be fundamental to driving industry change.



# The 2020 visions

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This section summarises the eight visions and suggests goals for achievement for the year 2020. For clarity, each one is presented separately, although in reality the visions are interdependent and the boundaries between them blurred.

## **Vision One**

*Environmentally sustainable construction* – for industry to design, construct and maintain its buildings and infrastructure to minimise negative impacts on the natural environment, thereby preserving environmental choices for future generations. By 2020, the vision is for the industry to have comprehensive eco-efficiency evaluation tools for all stages of the construction life cycle.

## **Vision Two**

*Meeting client needs* – for the design, construction, and operation of facilities to better reflect the present and future needs of the project initiator, owners/tenants, and aspirations of stakeholders. This should take into account the need for improved quality and economic viability, as well as have the flexibility to adapt to future circumstances, technologies and the needs of society.

## **Vision Three**

*Improved business environment* – for a regulatory, financial and procurement framework which encourages longer-term thinking and returns, a sharing of ideas and innovation between stakeholders, and a fair distribution of risk and returns. By 2020, the vision is for the industry to have a business environment achieving four types of dividends:

- **economic** – with a fairer balance of risk and return to stakeholders
- **social** – providing equitable returns across the community
- **environmental** – striking a more sustainable balance between the built and natural environments
- **governance** – providing clarity of business responsibilities, leading to a more informed, transparent and honest marketplace.

This vision was considered the highest priority for an improved future for the industry and the most important future research topic.

## **Vision Four**

*Welfare and improvement of the labour force* – for the industry workforce to be computer-literate and highly skilled, showing mutual respect for each other through management and workers acting collaboratively, with improved health and safety conditions on-site. A goal for 2020 is an ongoing supply of skilled workers to service this vital Australian industry. The fragmented set of occupational health and safety laws supports a call for a national code of construction safety management. The industry must also aim for a more internationally productive labour force operating in a less adversarial context. Almost 100 percent of site respondents confirm that workplace-related issues should form a part of the future research agenda.

## **Vision Five**

*Information and communication technologies for construction* – for communication and data transfer to be seamless and include mobile devices providing a commercially secure environment. These technologies will be embedded within both construction products and processes to improve efficiency and effectiveness. The knowledge economy will require property and construction to become more engaged in IT developments.

## **Vision Six**

*Virtual prototyping for design, manufacture and operation* – for the opportunity to *try before you buy* – from inception to design, construction, demolition and rebuild. The prototype will be an electronic representation of the facility, from which relevant decisions can be made and from which the procurement processes can develop. Respondents considered that virtual prototyping would have the highest likelihood of becoming the basis for design, procurement and asset management in the next 5 to 10 years.

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*“My 2020 vision is for an appealing industry that attracts the best people, and Australia becomes known for world’s best practice in construction process and safety.”*

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## **Vision Seven**

*Off-site manufacture* – for a majority of construction products to be manufactured off-site and brought to the site for assembly. This will enable better quality control, improved site processes including health and safety control, more environmentally friendly manufacture and possible reductions in cost. The goal is to establish the economic viability of off-site manufacture. Respondents considered off-site manufacture to have a very high likelihood of occurrence in the next 5 to 15 years.

## **Vision Eight**

*Improved process of manufacture of constructed products* – for developing new production processes, allowing the industry to work more efficiently. The goal for 2020 is to re-engineer the supply chain to ensure that the property and construction process is as lean as possible. The industry will use IT to enhance the value of the product to the client and stakeholders through better quality control, organisation and management of site activities. A substantial proportion of respondents reinforced the focus on the process of construction to achieve these improvements rather than the final constructed product or components.

# Conclusions

Significant industry, government and researcher initiative and investment will be required to properly address the challenges posed by industry from this *Construction 2020* process.

The industry's future depends on its ability to exploit research and innovation to continuously improve in line with international competition, and to meet the increasing demands of clients and the community. Government has a responsibility to use its position of influence to drive industry improvements and promote research and research user linkages.

Given that 94% of Australian construction businesses employ fewer than five people each, encouraging more involvement with SMEs is critical in ensuring the awareness and uptake of advanced technologies and management systems to upskill Australian industry.

For Australian property and construction to enhance its international competitiveness, it must be supported by well-resourced, focussed and energetic research and innovation.



Picture your industry vision – What do you wish for?

## Australia's CRC for Construction Innovation

The CRC for *Construction Innovation* is a national research, development and implementation centre focussed on the needs of the property, design, construction and facility management sectors.

Established in 2001 under the Australian Government's Cooperative Research Centres Programme<sup>1</sup> with headquarters at Queensland University of Technology in Brisbane, *Construction Innovation* is developing key technologies, tools and management systems to improve the effectiveness of the property and construction industry.

Through its active industry diffusion program of targeted industry seminars and publications, our CRC is bringing the outcomes of our applied research into industry practice.

*Construction Innovation* is well poised to deliver strategic and relevant research outcomes for business and is moving to partner with industry leaders in the important technology diffusion role. Our CRC is committed to continuing to deliver value to industry through applied research and implementation and will embark on a process of renewal which would see us extend our service to industry to 2014.

The full report is available from the web: [www.construction-innovation.info](http://www.construction-innovation.info)

CRC for *Construction Innovation*, Level 9 - L Block, QUT Gardens Point, 2 George St, Brisbane Qld Australia 4000

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<sup>1</sup> CRCs support research partnerships between the public sector (universities and government research agencies) and the private sector (firms and industry organisations), in long-term collaborative arrangements which support R&D and education activities to achieve outcomes of national economic and social significance. The CRC for *Construction Innovation* has been made possible through a \$14 million Australian Government grant through the CRC Programme and complemented by \$50 million in cash and in-kind support from industry, research and government partners.

### INDUSTRY

ARUP

Bovis  
Land Lease

BROOKWATER

dem

dem

John Holland

Rider Hunt  
WOODS BAGOT

### GOVERNMENT

ADCB  
BRISBANE CITY  
BSA

Building Commission

Queensland Government  
Department of Main Roads

Queensland Government  
Department of Public Works

Queensland Government  
State Development, Trade and Innovation

### RESEARCH

CSIRO

QUT

RMIT  
UNIVERSITY

The UNIVERSITY  
of NEWCASTLE  
AUSTRALIA

The University of Sydney