

5 September 2008

Committee Secretary
Senate Education, Employment and Workplace Relations Committee
Department of the Senate
PO Box 6100
Parliament House
CANBERRA ACT 2600

By email: eewr.sen@aph.gov.au

Dear Sir/Madam

Inquiry into the Effects of Climate Change on Training and Employment Needs

Thank you for the opportunity to provide a submission to the *Inquiry into the Effects of Climate Change on Training and Employment Needs*, an inquiry currently being undertaken by the Senate Education, Employment and Workplace Relations Committee.

The CRC for *Construction Innovation* is committed to progressing environmental sustainability in the built environment across Australia. Part of this commitment involves undertaking research into sustainability and the training of industry professionals at all levels.

Our submission has two parts: a general response to the terms of reference of the inquiry; and a specific comment on the role of *Construction Innovation* in training sustainability professionals

General Comment

We firstly make a general comment on the issue of skilled professionals in the industry. We explore the issue of the availability of sustainability professionals, and draw attention to the fact that there are a number of other factors beyond the control of training providers, which affect the availability of suitably qualified workers. These factors are best addressed in a collaborative manner between government, training institutions and industry. We also raise the issue of the need to re-train the existing work force in relation to sustainability - particularly in order to foster the uptake of sustainability innovations and policy.

Specific Comment

The specific comment focuses on the future role of *Construction Innovation* in the provision of training for sustainability professionals.

Yours sincerely

Dr Keith Hampson
Chief Executive Officer
CRC for *Construction Innovation*

Submission to the Senate Education, Employment and
Workplace Relations Committee

INQUIRY INTO THE EFFECTS OF CLIMATE CHANGE ON
TRAINING AND EMPLOYMENT NEEDS

5 September 2008

Respondents

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INTRODUCTION

The CRC for *Construction Innovation* is committed to progressing environmental sustainability in the built environment. The planned successor to this CRC – the *Sustainable Built Environment* Centre will further progress environmental sustainability for the built environment as the Centre's future is confirmed in early 2009. We would like to thank the Senate Committee for the opportunity to make a submission to that Senate.

The Inquiry focuses on the issue of developing Australia's capacity in the area of climate change, with particular reference to:

- o the ability of universities and other research and training institutions to meet current and future demand for climate change professionals; and
- o measures to assist understanding of climate change in the Asia-Pacific region, including the provision of training and skills assistance.

The chronic shortage of built environment industry workers – including professional, associate professional, and trades workers is a matter of ongoing concern for the built environment industry. The ongoing lack of skilled workers hampers the provision of infrastructure and building services generally and hinders the development of industry capability to improve the sustainability of cities and community infrastructure. Slow uptake of new technology which enhances the sustainability of the built environment is also adding to the resource shortage.

We would like to provide two responses to the terms of reference of the committee: one more generally on the availability of skilled workers and a second more specific response from the CRC for *Construction Innovation* (hereafter referred to as *Construction Innovation*) and the future of research and training in this sector.

GENERAL COMMENT ON THE TERMS OF REFERENCE OF THE INQUIRY

It is well known that there is a chronic skills shortage of professionals in the construction industry. Latest figures from the Department of Education, Employment and Workplace Relations (2008) indicate that while skilled job vacancies fell overall in Australia, building professionals and associate professionals went against the national trend, and the number of vacancies rose in the last month. Latest vacancy rates are noted in Table 1, with construction-relevant personnel highlighted in bold.

Table 1: Current Skilled Vacancy Rates

Type of employee	Current # of Vacancies
Professionals	
Science	72
Building and engineering	212
Accountants and Auditors	118
Marketing and Advertising	21
Organisation and Information	58
Health	560
Social	184
Associate Professionals	
Medical / Science Technical Officers	29
Building / Engineering Associates	154
Trades	
Metal	541
Automotive	259
Electrical and Electronics	250
Construction	580
Chefs	222
Food	158
Printing	41
Wood	96
Hairdressers	115

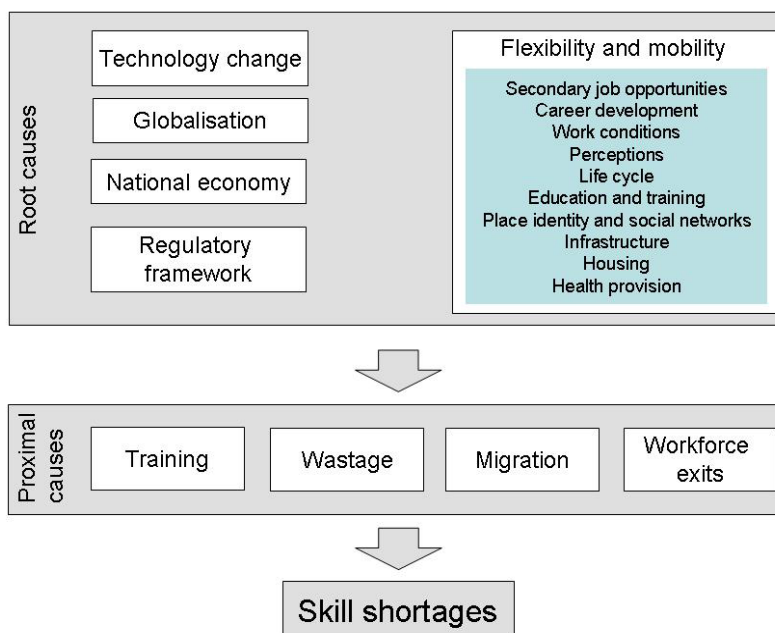
This shortage is not a recent occurrence, as there have been considerable skills shortages in the built environment industry for a long period of time.

Availability of skilled professionals is more than a matter of supply

The first term of reference for the inquiry focuses on the ability of universities and other training organisations to meet the demand for climate change professionals. There appears to be an implicit assumption in this term of reference that the availability of workers is directly related to the ability of training organisations, such as universities and Vocational Education and Training providers, to prepare workers for employment.

While under-supply of trained people is one element driving skills shortages in Australia, it is not the only element. The Bureau of Transport and Regional Economics (BTRE) (2006) noted that skill shortages are driven by a number of factors, such as migration, exits from the workforce, what they term wastage, as well as training. Training refers to the number of people being trained; wastage the number of people trained in a skill, but who are not working in that occupation; migration is the impacts of global labour market; and exits are people leaving the workforce (BTRE 2006). Further drivers include technology change, globalisation, the national economy, the regulatory framework, and perceptions of the work. This is demonstrated in Figure 1.

Figure 1 - Drivers of Skill Shortages (BTRE 2006)



The Australian Chamber of Commerce and Industry (ACCI) (2006) has also examined the issue of skill shortages, and has noted similar range of issues in relation to the availability of skilled labour. ACCI particularly notes that outdated perceptions may restrict the entrance of new workers to the industry. In other words, while training organisations have the capacity and capability to train sufficient numbers of workers to meet demand, there is limited number of people taking an interest in some professions, resulting in low enrolments. Another second issue is the aging workforce, which will see increasing numbers of skilled workers exiting from the industry in the next 10 years (ACCI 2006).

This complexity in relation to skill shortages is important as ensuring sufficient numbers is not just a matter of the capability of training providers to supply enough workers to meet demand. Instead, a wider focus is needed to address the multiple other factors which influence the provision of trained workers, and possibly a whole-of-government approach to addressing the causes of skill shortages in the industry.

BETR (2006) make the strong case that the availability of workers is not just influenced by the actions of training providers, but is also influenced by employers, government, and employees themselves. Consequently, a more collaborative approach may be needed to improve public perceptions of certain trades and professions (including the built environment industry), improving working conditions, worker mobility and infrastructure provision, as well as ensuring adequate numbers of people are being trained.

Focus on new workers – perhaps a broader focus is needed

The other aspect of the terms of reference of the committee we would like to comment on is the need to retain existing workers. It is, of course, important to ensure a constant supply of new professionals to meet rising demand however the issue of sustainability also requires the retraining of existing workers. It is one matter to ensure that new professionals are equipped to meet the challenges of climate change. It is another to ensure that the *existing* workforce also has the skills to meet this challenge.

While the notion of sustainability has entered the mainstream public lexicon, there is considerable effort needed to shift perceptions and workplace practices amongst existing workers. We would suggest to the Inquiry that retraining is also needed for significant numbers of existing construction professionals, associate professionals and trades people in order for them to understand the practical consequences of sustainability and climate change for the built environment.

Additionally, as research progresses, and our understanding of climate change and the sustainable built environment increases, new materials, new technologies, innovations and ways of working will emerge. These novel arrangements may well result in the emergence of *new* professions, requiring different skill sets, not all of which can be predicted in advance. Consequently, estimates of skill shortages and training need continual fine-tuning, as awareness for new roles and professions arises.

This is particularly the case as new sustainability tools and techniques, together with regulations and policies - and indeed a new culture - are introduced to the industry. The up-take of sustainability policy and innovations requires a partnership between research and education institutes, government agencies, professional associations and industry in order for the benefits of these innovations to be realised.

Conclusion to First Response

While acknowledging that considerable effort is needed by training providers to provide sufficient skilled workers for climate change professionals in the built environment industries, we suggest that:

- There are a number of drivers and underlying causes of skill shortages, of which training provision is only one element, so a broader focus on these drivers, and underlying causes is needed
- There is also a need for considerable retraining of the existing workforce in order for new technologies and ways of working to be adopted in a wide-spread manner
- These new technologies and innovations may require new professions and workers, whose skill sets are yet to be determined
- Both of these issues are best addressed in a collaborative manner with industry, government, professional associations and research institutions, such as *Construction Innovation* or its successor, working together on a common goal.

CRC FOR CONSTRUCTION INNOVATION

Construction Innovation is a national research, development and implementation centre focused on the needs of the planning, design, construction and facility management sectors for infrastructure and building. *Construction Innovation* was established in 2001, and is developing key technologies, tools and management systems to improve the effectiveness of the built environment industry.

Membership of *Construction Innovation*

Current partners of *Construction Innovation* include:

Private Industry	Government	Research
Arup	Australian Building Codes Board	Curtin University of Technology
Bovis Lend Lease	Building Commission (VIC)	Queensland University of Technology
John Holland Group	Building Services Authority (QLD)	RMIT University
Leighton Contractors	Department of Main Roads (QLD)	The University of Newcastle
Mirvac	Department of Public Works (QLD)	
Nexus Point Solutions	Department of Tourism, Regional Development and Industry (QLD)	
PB	Sydney Opera House	
Rider Levett Bucknall	Department of Housing and Works (WA)	
Thiess		
Woods Bagot		

Many research projects conducted by *Construction Innovation* focus on sustainability. These projects include research into sustainable subdivisions and housing developments, sustainability and the Building Code of Australia, tools which assess the sustainability of building designs, and economic sustainability of the construction industry in Australia. More recently, *Construction Innovation* commenced research into the regulatory environment in which the construction industry operates in Australia, including sustainability.

Through its research and innovation program, *Construction Innovation* is committed to actively working to ensure a more sustainable built environment. Specifically, *Construction Innovation* is working to achieve this agenda in four ways: training climate change professionals, industry training and skill development; research and implementation to improve the sustainability of the built environment; and collaborations with like-minded entities. Importantly *Construction Innovation* has also been working closely with the Australian infrastructure and building industry nationally, and secured a charter for its renewal bid in 2009 as the *Sustainable Built Environment Centre*. An outline of the goals of this new targeted centre is also included.

- **Training climate change professionals**
 - Through partnerships with its university participants, *Construction Innovation* is providing full and part scholarships to fund the training of applied researchers in the area of sustainability at masters and doctorate levels.
- **Industry training and skill development**
 - *Construction Innovation* assists in the provision of training and skills through its industry education activities, dissemination of research into trade journals, and web-based education activities (e.g. <http://www.yourbuilding.org>). These education programs raise awareness of sustainability issues, and provide practical ideas for all level of workers in the built environment industry to improve the sustainability of built assets.
 - More particularly, *Construction Innovation* is developing a *Sustainable Built Environment Centre* as its successor from mid-2009 as discussed in detail below.

- **Research and Implementation**

- *Construction Innovation* also funds industry-directed research projects which focus specifically on developing technology and tools to improve the sustainability of the built environment. These include:
 - Specific technology-based tools which enhance the sustainability of buildings through Life Cycle Analysis, Re-Living of Existing Buildings, Sustainable Sub-divisions, Right Sizing Air Conditioning.
 - Public policy initiatives, such as Sustainability and the Building Code of Australia, and Submissions to the Sustainable Cities Inquiry.

- **Collaborations**

- *Construction Innovation* is a national joint venture involving a unique industry-wide partnership between industry, government, and research organisations. The achievement of the objectives above is only possible with the active collaboration of these entities and the provision of cash and in-kind support by partner groups.
- *Construction Innovation* maintains a number of national and international collaborations to further the research and implementation objectives of the organisation, these include:
 - Australian Construction Industry Forum (ACIF) comprising 13 national industry associations
 - Australian Sustainable Built Environment Council (ASBEC)
 - Australian Procurement and Construction Council (APCC)
 - BuildingSMART
 - International Construction Research Alliance (ICALL)
 - International Council for Research and Innovation in Building and Construction (CIB)
 - Ongoing collaborations with universities such as Salford University (UK), and Stanford University (USA).
- Of particular interest to the Committee would be the Australian Sustainable Built Environment Council (ASBEC). *Construction Innovation* played a key role in the formation of ASBEC in 2004. As you would be aware, ASBEC met in October 2005, and endorsed recommendations 1 to 3 of the Sustainable Cities Report. Representatives of *Construction Innovation* were present at this meeting. In 2007, ASBEC also commissioned the Centre for International Economics to develop its Climate Change Task Group's paper titled Capitalising on the building sector's potential to lessen the costs of a broad based GHG emissions cut (http://www.asbec.asn.au/files/Building-sector-potential_Sept13.pdf) which has been tabled for Government use in informed policy development.

- **Sustainable Built Environment Centre**

- The SBE centre will deliver knowledge and skills to industry in accordance with industry-identified needs and the Construction and Property Services Industry Skills Council Industry Skills Report (2005) which highlighted shortfalls in construction and property skills in important areas relating to technological advancement, safety and eBusiness. This report also highlighted the need to attract and retain a more gender-balanced workforce and take advantage of increased participation of women in the workforce. This Program will achieve these aims via an integrated model that draws on the outputs from the centre's research programs.
- Skill and career developmental pathways must be evident to people working in the construction industry to the extent that all forms of skills development and education are mutually reinforcing. Technical and Further Education (TAFE) courses need to link to university awards and vice versa. In the first instance, outputs from the sustainability and safety research programs will form the basis of pilots for the integration of curriculum in TAFE and Universities in Western Australia. This will then be applied to other paired networks in Western Australia as well as Queensland and Victoria.
- In recognition of the need for an integrated approach to skills development in industry, the *Sustainable Built Environment* centre will work closely with TAFE and other higher education collaborators to ensure that the content delivered from the centre's research Programs will also feed into the curriculum for higher education (e.g. at universities, a Bachelor of Construction Management and, at TAFE, a Diploma of Building). These partnerships will act as knowledge and skill demonstrators for Australian industry. Secondment arrangements will place select university researchers into industry for a period of time and, likewise, bring industry professionals who are already supervising PhD students or engaged in projects into universities. The centre will develop best-practice engagement models between industry partners, TAFE and universities in producing industry-ready graduates to address the challenges of climate change.

- **Specific Program Outputs**

- Training modules and programs to deliver *Sustainable Built Environment* Centre research outputs to end-users, including programs for:
 - Employers of apprentices to enhance mentoring initiatives and outcomes;
 - TAFE and other tertiary educators to embed sustainability principles and practices into curricula; and
 - Primary and secondary school students to guide career decision making.
- Industry skills exchange programs for tertiary students (into industry), industry practitioners (into research) and research scientists (into industry).
- Scholarships in *Sustainable Built Environment* fields of study for TAFE, undergraduate and postgraduate students.
- Strategy to attract and retain workers including promoting the industry's engagement with corporate social responsibility.
- Consistent and reliable safety training for the infrastructure and building sector.
- A "skills-required" forecasting tool that predicts the training needs of future construction projects.

- **Program Outcomes for Industry**
 - Higher recruitment and retention rates for women, young and older workers.
 - Faster dissemination of new sustainability knowledge into industry.
 - More effective engagement between research and industry.
 - Greater capacity to deliver sustainable built outcomes within industry.
 - Greater skills alignment between national curricula and industry needs.
 - Identification and development of future skills required by industry.
 - Improving industry attractiveness and retention rates for trade and tertiary qualified professionals.

We would welcome the opportunity of working with the government, industry and research providers in ensuring that the built environment industry has the professional capability to better address the critical issue of climate change.

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